



McNAUGHTON-McKAY
ELECTRIC COMPANY
YOUR ELECTRICAL CONNECTION

February - September 2020

Training Schedule

**TO REGISTER OR FOR
 ADDITIONAL INFORMATION:**

NORTHERN REGION—MICHIGAN

[Ann Arbor, Flint, Madison Heights]
Vicki Isom | *Training and Services Specialist*
 1357 E. Lincoln Avenue | Madison Heights, MI 48071
 Office: 248-582-2485 | isomv@mc-mc.com

NORTHERN REGION—CENTRAL OHIO

[Columbus, Hebron, Mansfield]
Terri Williams | *Services Specialist*
 2255 Citygate Dr. | Columbus, OH 43219
 Office: 614-428-2955 | williatl@mc-mc.com

NORTHERN REGION—NORTHWEST OHIO

[Defiance, Findlay, Maumee/Toledo]
Darek Lajiness | *Services Solutions Engineer*
 355 Tomahawk Dr. | Maumee, OH 43537
 Office: 419-482-7839 | lajinesd@mc-mc.com

SOUTHERN REGION—GEORGIA

[Albany, Carrollton, Cartersville, Columbus, Covington, LaGrange, Norcross, Savannah, Thomasville]
Bernadette Hamm | *Training and Services Coordinator*
 6685 Best Friend Road | Norcross, GA 30071
 Office: 770-825-8641 | hammb@mc-mc.com

SOUTHERN REGION—NORTH & SOUTH CAROLINA

[Charlotte, Gastonia, Greenville, Spartanburg]
Whitney Young | *Services Coordinator*
 35 Old Mill Road | Greenville, SC 29607
 Office: 864-234-8510 | youngw@mc-mc.com

SOUTHERN REGION—NORTH CAROLINA

[New Bern, Fayetteville, Wilmington]
Becky Book | *Services Administrator*
 1000 Newman Road | New Bern NC 28562
 Office: 252.636-4616 | bookb@mc-mc.com

SOUTHERN REGION—SOUTH CAROLINA

[Charleston]
Lin Keely | *Services Specialist*
 464 Deanna Lane | Charleston, SC 29492
 Office: 843-856-7723 | keelyl@mc-mc.com

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This schedule is subject to change without notice. Charges for no shows or cancellations within 14 days of a start date may apply to Technical Training Courses.

Training...Unleashing the power of technology through training.

Technical Training Courses

These courses incorporate the latest technical content, lecture, labs and instruction for product specific training.

Studio 5000 Logix Designer / ControlLogix

Build a solid foundation of the ControlLogix platform and RSLogix 5000 software through the following Rockwell Automation courses.

CCP146

Studio 5000 Logix Designer Level 1:
ControlLogix System Fundamentals

2 Days \$1,600.00



e-Materials

Rockwell's Training business is starting to "Go Green"

Materials for this class are provided in digital format only. Students are required to download the digital materials to their own devices prior to class and bring their device with them to class. Print materials will not be provided. Students have the ability to print materials as required.

Begin	End	Location
01/21/20	01/22/20	Rockwell Automation - Charlotte, NC
01/28/20	01/29/20	Rockwell Automation - Alpharetta, GA
02/04/20	02/05/20	Rockwell Automation - Troy, MI
02/11/20	02/12/20	Rockwell automation - Greenville, SC
02/18/20	02/19/20	Rockwell Automation - Charlotte, NC
03/10/20	03/11/20	McNaughton-McKay - Columbus, OH
03/17/20	03/18/20	Rockwell Automation - Alpharetta, GA
03/24/20	03/25/20	Rockwell automation - Charlotte, NC
03/31/20	04/01/20	Rockwell Automation - Alpharetta, GA
04/07/20	04/08/20	Rockwell Automation - Charlotte, NC
04/14/20	04/15/20	McNaughton-McKay - Columbus, OH
04/28/20	04/29/20	Rockwell Automation - Troy, MI
04/28/20	04/29/20	Rockwell Automation - Greenville, SC
04/28/20	04/29/20	Rockwell Automation - Charlotte, NC
05/05/20	05/06/20	Rockwell Automation - Alpharetta, GA
05/19/20	05/20/20	McNaughton-McKay - Columbus, GA
05/27/20	05/28/20	Rockwell Automation - Charlotte, NC
06/09/20	06/10/20	Rockwell Automation - Troy, MI
06/09/20	06/10/20	Rockwell Automation - Alpharetta, GA
06/09/20	06/10/20	McNaughton-McKay - Albany, GA
06/23/20	06/24/20	Rockwell Automation - Greenville, SC
06/23/20	06/24/20	Rockwell Automation - Charlotte, NC
07/14/20	07/15/20	McNaughton-McKay - Maumee, OH
07/28/20	07/29/20	Rockwell Automation - Charlotte, NC
08/04/20	08/05/20	Rockwell Automation - Troy, MI
08/04/20	08/05/20	Rockwell Automation - Alpharetta, GA
08/18/20	08/19/20	Rockwell Automation - Greenville, SC
08/25/20	08/26/20	Rockwell Automation - Alpharetta, GA
09/09/20	09/10/20	Rockwell Automation - Charlotte, NC
09/09/20	09/10/20	Rockwell Automation - Greenville, SC
09/22/20	09/23/20	Rockwell Automation - Troy, MI
09/22/20	09/23/20	Rockwell Automation - Charlotte, NC

CCP298

Studio 5000 Logix Designer Level 1:
CompactLogix Fundamentals &
Troubleshooting

5 Days \$2,780.00

**Start time on day one will be communicated to you upon registration.

Begin	End	Location
09/14/20	09/18/20	McNaughton-McKay - Madison Heights, MI

Technical Training Courses

These courses incorporate the latest technical content, lecture, labs and instruction for product specific training.

Studio 5000 Logix Designer / ControlLogix

Build a solid foundation of the ControlLogix platform and RSLogix 5000 software through the following Rockwell Automation courses.

CCP299

Studio 5000 Logix Designer Level 1:
ControlLogix Fundamentals &
Troubleshooting

4.5 Days

\$2,780.00

**Start time on day one will be communicated to you upon registration.



e-Materials

Rockwell's Training business is starting to "Go Green"

Materials for this class are provided in digital format only. Students are required to download the digital materials to their own devices prior to class and bring their device with them to class. Print materials will not be provided. Students have the ability to print materials as required.

Begin	End	Location
01/06/20	01/10/20	Rockwell Automation - Charlotte, NC
01/27/20	01/31/20	Rockwell Automation - Greenville, SC
02/03/20	02/07/20	McNaughton-McKay - Savannah, GA
02/17/20	02/21/20	Rockwell Automation Alpharetta, GA
02/24/20	02/28/20	Rockwell Automation - Charlotte, NC
03/09/20	03/13/20	Rockwell automation - Greenville, SC
03/30/20	04/03/20	Rockwell Automation - Troy, MI
03/30/20	04/03/20	Rockwell Automation - Charlotte, NC
03/30/20	04/03/20	Rockwell Automation - Greenville, SC
04/06/20	04/10/20	McNaughton-McKay - Columbus, GA
04/20/20	04/24/20	Rockwell Automation - Troy, MI
04/20/20	04/24/20	Rockwell Automation - Greenville, SC
04/20/20	04/24/20	McNaughton-McKay - Norcross, GA
04/27/20	05/01/20	Rockwell Automation - Alpharetta, GA
05/04/20	05/08/20	Rockwell Automation - Charlotte, NC
05/18/20	05/22/20	Rockwell Automation - Troy, MI
05/18/20	05/22/20	Rockwell Automation - Greenville, SC
06/01/20	06/05/20	Rockwell Automation - Charlotte, NC
06/01/20	06/05/20	McNaughton-McKay - Charleston, SC
06/08/20	06/12/20	McNaughton-McKay - Maumee, OH
06/08/20	06/12/20	McNaughton-McKay - Fayetteville, NC
06/15/20	06/19/20	Rockwell Automation - Greenville, SC
07/06/20	07/10/20	Rockwell Automation - Troy, MI
07/06/20	07/10/20	Rockwell Automation - Alpharetta, GA
07/06/20	07/10/20	Rockwell Automation - Charlotte, NC
07/27/20	07/31/20	Rockwell Automation - Greenville, SC
08/03/20	08/07/20	Rockwell Automation - Charlotte, NC
08/10/20	08/14/20	Rockwell Automation - Troy, MI
08/10/20	08/14/20	Rockwell Automation - Alpharetta, GA
08/10/20	08/14/20	McNaughton-McKay - Savannah, GA
08/24/20	08/28/20	Rockwell Automation - Charlotte, NC
08/24/20	08/28/20	Rockwell Automation - Greenville, SC
08/31/20	09/04/20	Rockwell Automation - Troy, MI
08/31/20	09/04/20	Rockwell Automation - Alpharetta, GA
08/31/20	09/04/20	McNaughton-McKay - LaGrange, GA
09/14/20	09/18/20	Rockwell Automation - Greenville, SC
09/14/20	09/18/20	McNaughton-McKay - Norcross, GA
09/21/20	09/25/20	McNaughton-McKay - Columbus, OH

Technical Training Courses

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Studio 5000 Logix Designer / ControlLogix

Build a solid foundation of the ControlLogix platform and RSLogix 5000 software through the following Rockwell Automation courses.

CCP151

Studio 5000 Logix Designer Level 2:
Basic Ladder Logic Programming

2 Days

\$1,600.00



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Begin	End	Location
01/23/20	01/24/20	Rockwell Automation - Charlotte, NC
01/30/20	01/31/20	Rockwell Automation - Alpharetta, GA
02/06/20	02/07/20	Rockwell Automation - Troy, MI
02/13/20	02/14/20	Rockwell Automation - Greenville, SC
02/20/20	02/21/20	Rockwell automation - Charlotte, NC
03/12/20	03/13/20	McNaughton-McKay - Columbus, OH
03/12/20	03/13/20	McNaughton-McKay - Columbus, OH
03/19/20	03/20/20	Rockwell Automation - Alpharetta, GA
03/26/20	03/27/20	Rockwell automation - Charlotte, NC
04/02/20	04/03/20	Rockwell Automation - Alpharetta, GA
04/09/20	04/10/20	Rockwell Automation - Charlotte, NC
04/16/20	04/17/20	McNaughton-McKay - Columbus, OH
04/23/20	04/24/20	Rockwell Automation - Greenville, SC
04/28/20	04/29/20	McNaughton-McKay - Wilmington, NC
04/30/20	05/01/20	Rockwell Automation - Troy, MI
04/30/20	05/01/20	Rockwell Automation - Greenville, SC
04/30/20	05/01/20	Rockwell Automation - Charlotte, NC
05/07/20	05/08/20	Rockwell Automation - Alpharetta, GA
05/27/20	05/28/20	Rockwell Automation - Greenville, SC
06/11/20	06/12/20	Rockwell Automation - Troy, MI
06/11/20	06/12/20	Rockwell Automation - Alpharetta, GA
06/23/20	06/24/20	McNaughton-McKay - Columbus, GA
06/25/20	06/26/20	Rockwell Automation - Greenville, SC
06/25/20	06/26/20	Rockwell Automation - Charlotte, NC
07/16/20	07/17/20	McNaughton-McKay - Maumee, OH
07/30/20	07/31/20	Rockwell Automation - Charlotte, NC
08/06/20	08/07/20	Rockwell Automation - Troy, MI
08/06/20	08/07/20	Rockwell Automation - Alpharetta, GA
08/20/20	08/21/20	Rockwell Automation - Greenville, SC
08/27/20	08/28/20	Rockwell Automation - Alpharetta, GA
09/24/20	09/25/20	Rockwell Automation - Troy, MI
09/24/20	09/25/20	Rockwell Automation - Charlotte, NC

Technical Training Courses

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Studio 5000 Logix Designer / ControlLogix

Build a solid foundation of the ControlLogix platform and RSLogix 5000 software through the following Rockwell Automation courses.

CCP152

Studio 5000 Logix Designer Level 4:
Function Block Programming

2 Days

\$1,600.00

Begin	End	Location
05/27/20	05/28/20	Rockwell Automation - Alpharetta, GA
06/23/20	06/24/20	McNaughton-McKay - Columbus, OH

CCP153

Studio 5000 Logix Designer Level 2:
ControlLogix Maintenance &
Troubleshooting

4 Days

\$2,360.00

Begin	End	Location
01/28/20	01/31/20	Rockwell Automation - Charlotte, NC
02/11/20	02/14/20	Rockwell Automation - Troy, MI
02/11/20	02/14/20	Rockwell Automation - Alpharetta, GA
03/03/20	03/06/20	Rockwell automation - Greenville, SC
04/07/20	04/10/20	Rockwell Automation - Greenville, SC
04/14/20	04/17/20	Rockwell Automation - Alpharetta, GA
04/21/20	04/24/20	Rockwell Automation - Charlotte, NC
05/12/20	05/15/20	Rockwell Automation - Troy, MI
05/12/20	05/15/20	Rockwell Automation - Greenville, SC
06/16/20	06/19/20	Rockwell Automation - Charlotte, NC
06/23/20	06/26/20	Rockwell Automation - Troy, MI
06/23/20	06/26/20	Rockwell Automation - Alpharetta, GA
07/07/20	07/10/20	McNaughton-McKay - Albany, GA
07/14/20	07/17/20	Rockwell Automation - Greenville, SC
07/21/20	07/24/20	Rockwell Automation - Charlotte, NC
07/28/20	07/31/20	Rockwell Automation - Troy, MI
08/18/20	08/21/20	Rockwell Automation - Alpharetta, GA
08/18/20	08/21/20	Rockwell Automation - Charlotte, NC
09/01/20	09/04/20	Rockwell Automation - Greenville, SC
09/22/20	09/25/20	Rockwell Automation - Alpharetta, GA

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Studio 5000 Logix Designer / ControlLogix

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CCP143

Studio 5000 Logix Designer Level 3:
Project Development

4 Days \$2,360.00



e-Materials

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Begin	End	Location
01/28/20	01/31/20	Rockwell Automation - Troy, MI
02/04/20	02/07/20	Rockwell Automation - Greenville, SC
02/11/20	02/14/20	Rockwell automation - Charlotte, NC
02/25/20	02/28/20	Rockwell Automation - Troy, MI
03/10/20	03/13/20	Rockwell automation - Charlotte, NC
04/07/20	04/10/20	Rockwell Automation - Greenville, SC
04/14/20	04/17/20	Rockwell Automation - Troy, MI
04/14/20	04/17/20	Rockwell Automation - Charlotte, NC
04/14/20	04/17/20	Rockwell Automation - Greenville, SC
04/21/20	04/24/20	Rockwell Automation - Alpharetta, GA
05/05/20	05/08/20	Rockwell Automation - Greenville, SC
05/12/20	05/15/20	Rockwell Automation - Charlotte, NC
05/19/20	05/22/20	Rockwell Automation - Alpharetta, GA
06/02/20	06/05/20	Rockwell Automation - Troy, MI
06/09/20	06/12/20	Rockwell Automation - Greenville, SC
06/09/20	06/12/20	Rockwell Automation - Charlotte, NC
06/16/20	06/19/20	Rockwell Automation - Alpharetta, GA
07/07/20	07/10/20	McNaughton-McKay - Maumee, OH
07/14/20	07/17/20	Rockwell Automation - Charlotte, NC
07/21/20	07/24/20	Rockwell Automation - Troy, MI
07/21/20	07/24/20	Rockwell Automation - Alpharetta, GA
08/04/20	08/07/20	Rockwell Automation - Greenville, SC
09/01/20	09/04/20	Rockwell Automation - Charlotte, NC
09/15/20	09/18/20	Rockwell Automation - Troy, MI
09/15/20	09/18/20	Rockwell Automation - Alpharetta, GA
09/22/20	09/25/20	Rockwell Automation - Greenville, SC

CCCL21

Studio 5000 Logix Designer Level 3:
Basic Ladder Logic Interpretation

2 Days \$1,600.00

Begin	End	Location
04/07/20	04/08/20	McNaughton-McKay - LaGrange, GA
06/16/20	06/17/20	McNaughton-McKay - Norcross, GA
06/30/20	07/01/20	Rockwell Automation - Troy, MI
06/30/20	07/01/20	Rockwell Automation - Greenville, SC
09/09/20	09/10/20	Rockwell Automation - Alpharetta, GA

CCN144-A

Studio 5000 Logix Designer Level 4:
Kinetix 5700 (CIP) Programming

4 Days \$2,360.00



e-Materials

Begin	End	Location
05/19/20	05/22/20	McNaughton-McKay - Madison Heights, MI

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Technical Training Courses

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Studio 5000 Logix Designer / ControlLogix

Build a solid foundation of the ControlLogix platform and RSLogix 5000 software through the following Rockwell Automation courses.

CCP300	Begin	End	Location
Logix5000 Maintainer Certificate 5 Days \$2,780.00	02/17/20	02/21/20	Rockwell Automation - Troy, MI
	02/24/20	02/28/20	Rockwell Automation - Alpharetta, GA
	03/09/20	03/13/20	McNaughton-McKay - Savannah, GA
	03/09/20	03/13/20	McNaughton-McKay - LaGrange, GA
	03/16/20	03/20/20	McNaughton-McKay - Charleston, SC
	03/23/20	03/27/20	Rockwell Automation - Greenville, SC
	05/04/20	05/08/20	Rockwell Automation - Troy, MI
	05/18/20	05/22/20	Rockwell Automation - Charlotte, NC
	05/18/20	05/22/20	McNaughton-McKay - Albany, GA
	07/06/20	07/10/20	Rockwell Automation - Greenville, SC
	07/27/20	07/31/20	Rockwell Automation - Alpharetta, GA
	08/10/20	08/14/20	McNaughton-McKay - Columbus, OH
	09/21/20	09/25/20	McNaughton-McKay - Charleston, SC

CCP250	Begin	End	Location
Accelerated Logix5000 Programming Certificate Level 1 5 Days \$2,780.00	02/03/20	02/07/20	McNaughton-McKay - Albany, GA
	02/24/20	02/28/20	Rockwell automation - Greenville, SC
	03/16/20	03/20/20	Rockwell Automation - Charlotte, NC
	03/23/20	03/27/20	McNaughton-McKay - Fayetteville, NC
	04/06/20	04/10/20	Rockwell Automation - Alpharetta, GA
	05/04/20	05/08/20	McNaughton-McKay - Columbus, OH
	07/13/20	07/17/20	McNaughton-McKay - Norcross, GA
	07/20/20	07/24/20	Rockwell Automation - Greenville, SC
	08/10/20	08/14/20	Rockwell Automation - Charlotte, NC
	08/10/20	08/14/20	McNaughton-McKay - Maumee, OH
	08/10/20	08/14/20	McNaughton-McKay - Columbus, GA
	08/24/20	08/28/20	Rockwell Automation - Troy, MI

CCP251	Begin	End	Location
Advanced Logix5000 Programming Certificate 5 Days \$2,221.00	02/04/20	02/07/20	Rockwell Automation - Charlotte, NC
	03/10/20	03/13/20	Rockwell Automation Alpharetta, GA
	03/24/20	03/27/20	Rockwell Automation - Troy, MI
	05/12/20	05/15/20	Rockwell Automation - Alpharetta, GA
	06/02/20	06/05/20	Rockwell Automation - Greenville, SC
	06/16/20	06/19/20	Rockwell Automation - Troy, MI
	09/15/20	09/18/20	Rockwell Automation - Charlotte, NC

Technical Training Courses

These courses incorporate the latest technical content, lecture, labs and instruction for product specific training.

PLC WIRING & TROUBLESHOOTING

At the completion of this training, the participant will be able to “talk through” and troubleshoot the PLC’s ladder logic using the Logix5000 software in order to locate a “real” faulty input or output device, replace it, and get the process back up and running. **It’s all about troubleshooting!**

Next, each participant will wire the actual input and output (I/O) field devices to the PLC. This includes photo-electric and inductive proximity sensors, selector switches, pushbuttons, contactors, indicator lamps, along with the DC Power Supply. **The participants actually wire their own PLC trainer!**

Using the RSLogix5000 software, the Communication Path will be configured along with the creation of Tags that will be used in the PLC’s ladder logic. The concept of “Real” and “Simulated” inputs and outputs will be covered, along with the troubleshooting tools of Toggling and Forcing. Next, Timer (TON, TOF, RTO, RTF) and Counter (CTU, CTD) circuits will be covered, along with One-Shot (ONS) and First-Scan (S:FS) instructions. Comparison Instructions (EQU, NEQ, LES, GRT, LEQ, GEQ, LIM) and Math Instructions (ADD, SUB, MUL, DIV, CPT) along with Set Bit if Zero/Negative (S:Z, S:N) will be thoroughly covered. The understanding of how a Jump (JMP), Master Control Reset (MCR), and Jump to Subroutine (JSR) functions, will be covered in detail.

To effectively troubleshoot a PLC-based system, one must know how the PLC’s Memory is structured using One, Two, and Three Dimension Arrays. This will be accomplished by troubleshooting ladder logic that includes instructions such as Fill File (FLL), Copy File (COP), Average File (AVE), Bit-Shift Right/Left (BSR, BSL), First-In-First-Out (FIFO) Load/Unload (FLL, FFU), Last-In-First-Out (LIFO) Load/Unload (LFL, LFU), Masked Move (MVM), Sequencer Output (SQO) using the Array, Mask, and Output Tables, along with Indirect Addressing and Add-On Instructions (AOI).

NOTE: Numerous hands-on labs utilizing troubleshooting skills are included in all of the above subject matter in order to reinforce the lecture material. All training materials will be provided. This course serves as a solid foundation for those planning on taking Rockwell Automation Studio 5000/ Control Logix courses.

Cost: \$1,895.00 per student for this 4-Day Course

February 04-07 2020 McNaughton-McKay—Norcross, GA

March 17-20 2020 McNaughton-McKay—Madison Heights, MI

May 12-15, 2020 McNaughton-McKay—Maumee, OH

August 04-07 2020 McNaughton-McKay—Ann Arbor, MI

Receive a 10% discount for 3-5 students; or 15% discount for 6 or more students Professional Development Hours (PDH): 32 at completion



E-learning courses are self-paced and self-directed so you can learn when and where it is convenient for you. Our e-learning incorporates a variety of fundamental and product specific topics to help you build expertise on automation and control systems.

Each learning module contain activities, software simulations, and demonstration videos to help reinforce learning concepts. The modules can be taken on any tablet or PC using Chrome, Safari, IE, Edge, or Firefox, and all content is narrated, and has a viewable transcript. All e-learning courses are currently only available in English.

HOW TO BUY: To purchase e-learning or to learn more about our training solutions, contact your local McNaughton-McKay Training Coordinator.

Technical Training Courses

These courses incorporate the latest technical content, lecture, labs and instruction for product specific training.

Visualization / HMI: Gain the hands on skills needed for designing and configuring your FactoryTalk View Machine Edition software and PanelView Plus terminals. In the FactoryTalk View Site Edition training you will practice the skills used to create an application, configure alarms and security, and test your application.

CCV204-A

FactoryTalk View Machine Edition—
PanelView Plus Programming

4 Days \$2,360.00



e-Materials

**Start time on day one will be communicated to you upon registration.

Begin	End	Location
04/14/20	04/17/20	McNaughton-McKay - Maumee, OH
06/02/20	06/05/20	McNaughton-McKay - Greenville, SC
06/23/20	06/26/20	McNaughton-McKay - Albany, GA
08/18/20	08/21/20	McNaughton-McKay - Madison Heights, MI
09/22/20	09/25/20	McNaughton-McKay - Charlotte, NC

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CCV207

FactoryTalk View SE Programming

5 Days \$2,780.00



e-Materials

Begin	End	Location
02/10/20	02/14/20	McNaughton-McKay - Maumee, OH
02/10/20	02/14/20	McNaughton-McKay - Madison Heights, MI
02/17/20	02/21/20	McNaughton-McKay - Greenville, SC
05/04/20	05/08/20	McNaughton-McKay - Columbus, GA
06/15/20	06/19/20	McNaughton-McKay - Madison Heights, MI
09/21/20	09/25/20	McNaughton-McKay - Maumee, OH

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CCV209-A

FactoryTalk View ME and PanelView
Plus Maintenance and Troubleshooting

2 Days \$1,600.00



e-Materials

Begin	End	Location
02/04/20	02/05/20	McNaughton-McKay - Charlotte, NC
03/10/20	03/11/20	McNaughton-McKay - Charleston, SC
03/31/20	04/01/20	McNaughton-McKay - Albany, GA
05/12/20	05/13/20	McNaughton-McKay - Charleston, SC
05/19/20	05/20/20	McNaughton-McKay - Columbus, OH
07/14/20	07/15/20	McNaughton-McKay - Greenville, SC
07/28/20	07/29/20	McNaughton-McKay - Norcross, GA
08/25/20	08/26/20	McNaughton-McKay - LaGrange, GA

Rockwell's Training business is starting to "Go Green"

Materials for this class are provided in digital format only. Students are required to download the digital materials to their own devices prior to class and bring their device with them to class. Print materials will not be provided. Students have the ability to print materials as required.

CCV210

Studio 5000 Designer & PanelView 5500
Programming

3 Days \$1,920.00

Begin	End	Location
04/28/20	04/30/20	McNaughton-McKay - Charlotte, NC
07/28/20	07/30/20	McNaughton-McKay - LaGrange, GA

FTVP

FactoryTalk Vantage Point Configuration
and Reporting

3 Days \$1,920.00

Begin	End	Location
02/04/20	02/06/20	McNaughton-McKay - Charleston, SC

Technical Training Courses

These courses incorporate the latest technical content, lecture, labs and instruction for product specific training.

Visualization / HMI: Gain the hands on skills needed for designing and configuring your FactoryTalk View Machine Edition software and PanelView Plus terminals. In the FactoryTalk View Site Edition training you will practice the skills used to create an application, configure alarms and security, and test your application.

RS-FTHSEC

FactoryTalk Historian SE Configuration and Data Collection

3.5 Days

\$2,360.00

**Start time on day one will be communicated to you upon registration.



e-Materials

Begin

03/10/20

06/16/20

End

03/13/20

06/19/20

Location

McNaughton-McKay - Maumee, OH

McNaughton-McKay - Savannah, GA

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CompactLogix, PLC-5 and SLC-500/RSLogix:

Learn how to program, maintain and troubleshoot your CompactLogix, PLC-5 and SLC-500 systems. You will learn how to interpret ladder logic programs, navigate through RSLogix software and manage projects with these courses.

CCPS45

SLC-500 and RSLogix 500 Advanced Maintenance and Troubleshooting

4 Days

\$2,360.00

Begin

02/18/20

End

02/21/20

Location

McNaughton-McKay - Maumee, OH

Condition Monitoring:

Learn about the basics of vibration analysis and predictive maintenance instrumentation. 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.

EK-ICM101

Vibration Analysis Fundamentals

3 Days

\$1,920.00

Begin

06/30/20

End

07/02/20

Location

McNaughton-McKay - LaGrange, GA

Process Control:

Learn about 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.

PRS013

PlantPAX System Configuration and Fundamentals

4.5 Days

\$2,780.00

**Start time on day one will be communicated to you upon registration.

Begin

08/03/20

End

08/07/20

Location

McNaughton-McKay - New Bern, NC

PRS019

PlantPAX System Configuration

5 Days

\$2,780.00

Begin

08/10/20

End

08/14/20

Location

McNaughton-McKay - New Bern, NC

Technical Training Courses

These courses incorporate the latest technical content, lecture, labs and instruction for product specific training.

Safety Products

Increase your safety awareness with our Lock-out/Tag-out and NFPA 70E training classes. Learn about OSHA requirements, proper procedures and maintenance practices with our Lock-out/Tag-out training. In the NFPA 70E training you will learn the background of NFPA 70E, review safety standards and PPE, and understand the boundaries for shock and flash protection.

SAF-LOG104 GuardLogix Controllers Application Development and Troubleshooting 3 Days \$1,920.00	Begin	End	Location
	01/21/20	01/23/20	Rockwell Automation - Troy, MI
	02/04/20	02/06/20	McNaughton-McKay - Greenville, SC
	03/03/20	03/05/20	Rockwell Automation - Troy, MI
	04/07/20	04/09/20	Rockwell Automation - Troy, MI
	04/14/20	04/16/20	McNaughton-McKay - Greenville, SC
	05/05/20	05/07/20	McNaughton-McKay - Savannah, GA
	05/27/20	05/29/20	Rockwell Automation - Troy, MI
	06/23/20	06/25/20	McNaughton-McKay - LaGrange, GA
	07/14/20	07/16/20	Rockwell Automation - Troy, MI
	09/01/20	09/03/20	McNaughton-McKay - Charlotte, NC
09/09/20	09/11/20	Rockwell Automation - Troy, MI	
SAF-TUV1 Functional Safety Machine Intro 3 Days \$1,808.00	Begin	End	Location
	04/21/20	04/23/20	Rockwell Automation - Twinsburg, OH
	06/02/20	06/04/20	Rockwell Automation - Alpharetta, GA
SAF-TUV0T Functional Safety for Machinery Technician Certificate 2 Days \$2,009.00	Begin	End	Location
	06/09/20	06/10/20	Rockwell Automation - Twinsburg, OH
	09/22/20	09/23/20	Rockwell Automation - Troy, MI
SAF-TUV2T Functional Safety for Machinery Engineer Certification 5 Days \$3,940.00	Begin	End	Location
	03/30/20	04/03/20	Rockwell Automation - Twinsburg, OH
	09/14/20	09/18/20	Rockwell Automation - Twinsburg, OH
SAF-COM101 Safety Relays & Devices Maintenance & Troubleshooting 2 Days \$1,600.00	Begin	End	Location
	07/14/20	07/15/20	McNaughton-McKay - Albany, GA
SAF-SFT10618 NFPA 70E 2018 Electrical Safety & Arc Flash Awareness 1 Day \$963.00	Begin	End	Location
	09/22/20	09/22/20	McNaughton-McKay - Columbus, GA

Technical Training Courses

These courses incorporate the latest technical content, lecture, labs and instruction for product specific training.

Safety Products

Increase your safety awareness with our Lock-out/Tag-out and NFPA 70E training classes. Learn about OSHA requirements, proper procedures and maintenance practices with our Lock-out/Tag-out training. In the NFPA 70E training you will learn the background of NFPA 70E, review safety standards and PPE, and understand the boundaries for shock and flash protection.

SAF-SFT11218 NFPA 70E 2018 Electrical Safety & Arc Flash Compliance 2 Days \$936.00	Begin	End	Location
	09/23/20	09/24/20	McNaughton-McKay - Columbus, GA

FND-035 Electrical Safety for Qualified Personnel 2 Days \$1,600.00	Begin	End	Location
	08/18/20	08/19/20	McNaughton-McKay - Norcross, GA

Networks

Learn how to design, configure and troubleshoot your networks with the following courses. Expand your knowledge of ControlNet, DeviceNet and EtherNet/IP networks and learn best practices for making them run more efficiently.

CCP182 Essentials of Industrial Ethernet Networks for the OT Professional 2 Days \$1,600.00	Begin	End	Location
	04/22/20	04/23/20	McNaughton-McKay - Madison Heights, MI

CCP183 Ethernet/IP Configuration & Troubleshooting 3 Days \$1,920.00	Begin	End	Location
	02/11/20	02/13/20	McNaughton-McKay - Columbus, OH
	03/03/20	03/05/20	McNaughton-McKay - Norcross, GA
	04/28/20	04/30/20	McNaughton-McKay - Madison Heights, MI
	05/12/20	05/14/20	McNaughton-McKay - Greenville, SC
	06/16/20	06/18/20	McNaughton-McKay - Columbus, OH
	08/04/20	08/06/20	McNaughton-McKay - LaGrange, GA
	08/04/20	08/06/20	McNaughton-McKay - Wilmington, NC
09/15/20	09/17/20	McNaughton-McKay - Charlotte, NC	

SPE201-LD ThinManager Configuration & Maintenance 2 Days \$1,600.00	Begin	End	Location
	03/03/20	03/04/20	McNaughton-McKay - Charlotte, NC


IMINS2 Managing Industrial Networks for Manufacturing with Cisco 5 Days \$2,780.00	Begin	End	Location
	03/02/20	03/06/20	Rockwell Automation - Alpharetta, GA

Technical Training Courses

These courses incorporate the latest technical content, lecture, labs and instruction for product specific training.

Drives / Power Control

Develop the skills needed to configure, start-up and troubleshoot drives through hands-on training in the following courses.

CCA101 AC/AC Motors and Drives Fundamentals 2 Days \$1,600.00	Begin	End	Location
	03/10/20	03/11/20	McNaughton-McKay - Albany, GA
	03/24/20	03/25/20	McNaughton-McKay Norcross, GA
	03/31/20	04/01/20	McNaughton-McKay - Greenville, SC
	07/21/20	07/22/20	McNaughton-McKay - Charlotte, NC
	08/18/20	08/19/20	McNaughton-McKay - Albany, GA
CCA182 PowerFlex 750 Series Configuration and Startup 2 Days \$1,600.00  e-Materials	Begin	End	Location
	03/03/20	03/04/20	McNaughton-McKay - Albany, GA
	03/10/20	03/11/20	McNaughton-McKay - Madison Heights, MI
	04/07/20	04/08/20	McNaughton-McKay - Charlotte, NC
	05/05/20	05/06/20	McNaughton-McKay - Norcross, GA
	05/19/20	05/20/20	McNaughton-McKay - LaGrange, GA
	07/14/20	07/15/20	McNaughton-McKay - Savannah, GA
	07/28/20	07/29/20	McNaughton-McKay - Charleston, SC
	09/01/20	09/02/20	McNaughton-McKay - Fayetteville, NC
	09/01/20	09/02/20	McNaughton-McKay - Greenville, SC
<p style="text-align: center;">Rockwell's Training business is starting to "Go Green"</p> <p>Materials for this class are provided in digital format only. Students are required to download the digital materials to their own devices prior to class and bring their device with them to class. Print materials will not be provided. Students have the ability to print materials as required.</p>			
CCA183 PowerFlex 750 Series Maintenance and Troubleshooting 2 Days \$1,600.00	Begin	End	Location
	03/05/20	03/06/20	McNaughton-McKay - Albany, GA
	03/12/20	03/13/20	McNaughton-McKay - Madison Heights, MI
	05/07/20	05/08/20	McNaughton-McKay - Norcross, GA
	05/21/20	05/22/20	McNaughton-McKay - LaGrange, GA
	07/16/20	07/17/20	McNaughton-McKay - Savannah, GA
	07/28/20	07/29/20	McNaughton-McKay - Charlotte, NC
	07/30/20	07/31/20	McNaughton-McKay - Charleston, SC
	08/31/20	09/01/20	McNaughton-McKay - Fayetteville, NC
09/15/20	09/16/20	McNaughton-McKay - Greenville, SC	
CCA185 PowerFlex 525 Series Start up and Configuration 1 Day \$963.00	Begin	End	Location
	02/11/20	02/11/20	McNaughton-McKay - Fayetteville, NC
	04/07/20	04/07/20	McNaughton-McKay - Norcross, GA
	04/14/20	04/14/20	McNaughton-McKay - Albany, GA
	06/23/20	06/23/20	McNaughton-McKay - Charlotte, NC
EMS-230 Motor Control & Troubleshooting 5 Days \$2,780.00	Begin	End	Location
	02/17/20	02/21/20	McNaughton-McKay Norcross, GA
	03/16/20	03/20/20	McNaughton-McKay - Greenville, SC
	07/13/20	07/17/20	McNaughton-McKay - Columbus, GA
	07/20/20	07/24/20	McNaughton-McKay - Greenville, SC
	08/17/20	08/21/20	McNaughton-McKay - Charlotte, NC

Technical Training Courses

These courses incorporate the latest technical content, lecture, labs and instruction for product specific training.

Motion Control

Gain an understanding of the concepts, terminology, functionality and applications of motion control. In addition, you will also learn how motion control applications function using the concepts and principles discussed in each lesson. Other learning opportunities can help with skills necessary to apply maintenance and troubleshooting techniques to diagnose and correct common problems on a Kinetix 6000 system.

CCN132

Motion Control Fundamentals using Kinetix 5700 (CIP) Servo Drives

3 Days

\$1,920.00

Begin

08/04/20
09/01/20

End

08/06/20
09/03/20

Location

McNaughton-McKay - Charlotte, NC
McNaughton-McKay - Albany, GA

CCN201

Kinetix 6500 Troubleshooting & Project Interpretation

3 Days

\$1,920.00

Begin

05/12/20
09/15/20

End

05/14/20
09/17/20

Location

McNaughton-McKay - New Bern, NC
McNaughton-McKay - Columbus, OH

CCN202

Kinetix 5700 Troubleshooting & Project Interpretation

3 Days

\$1,920.00

Begin

03/17/20
08/18/20

End

03/19/20
08/20/20

Location

McNaughton-McKay - Charlotte, NC
McNaughton-McKay - Maumee, OH

CCN130

Motion Control Fundamentals

2 Days

\$1,600.00



e-Materials

Begin

04/07/20
04/21/20
07/21/20

End

04/08/20
04/22/20
07/22/20

Location

McNaughton-McKay - Maumee, OH
McNaughton-McKay - Greenville, SC
McNaughton-McKay - Madison Heights, MI

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STAY CONNECTED

McNaughton-McKay News, Training, Events and Information



Technical Training Courses

These courses incorporate the latest technical content, lecture, labs and instruction for product specific training.

Craft Skills and Mechanical Concepts: Mechanical Maintenance

Classes offer an opportunity to develop core competencies, fundamentals, advanced fundamentals and equipment-specific skills.

MMS-125 Hydraulics & Pneumatics Fundamentals 3 Days \$1,920.00	Begin	End	Location
	08/11/20	08/13/20	McNaughton-McKay - Greenville, SC
MMS-245 Shaft Coupling & Alignment 5 Days \$2,780.00	Begin	End	Location
	02/11/20	02/15/20	McNaughton-McKay - Columbus, GA
MMS-250 Pipe Fitting 5 Days \$2,780.00	Begin	End	Location
	03/16/20	03/20/20	McNaughton-McKay - Columbus, GA

Craft Skills and Mechanical Concepts: Electrical Maintenance

Classes offer an opportunity to develop core competencies, fundamentals, advanced fundamentals and equipment-specific skills.

EMS-100 Basic Electrical Concepts 5 Days \$2,780.00	Begin	End	Location
	05/18/20	05/22/20	McNaughton-McKay - Cartersville, GA
	05/18/20	05/22/20	McNaughton-McKay - Charlotte, NC

Craft Skills and Mechanical Concepts: Instrument and Control

Classes offer an opportunity to develop core competencies, fundamentals, advanced fundamentals and equipment-specific skills.

ICS-100 Industrial Electronics 3 Days \$1,920.00 This course provides information on the function and circuit analysis of power supplies, amplifiers, integrators, comparators, and oscillators.	Begin	End	Location
	08/25/20	08/27/20	McNaughton-McKay - Charleston, SC

Craft Skills and Mechanical Concepts: Industrial Maintenance

Classes offer an opportunity to develop core competencies, fundamentals, advanced fundamentals and equipment-specific skills.

MFG213 Industrial Electrical Controls Fundamentals 3 Days \$1,920.00 This course is designed to provide knowledge and skills required to install, maintain and troubleshoot machine controls.	Begin	End	Location
	02/25/20	02/28/20	McNaughton-McKay - Charlotte, NC
	04/28/20	05/01/20	McNaughton-McKay - Greenville, SC
	06/02/20	06/05/20	McNaughton-McKay - LaGrange, GA
	06/09/20	06/12/20	McNaughton-McKay - Savannah, GA
	06/16/20	06/19/20	McNaughton-McKay - Charlotte, NC
	08/18/20	08/21/20	McNaughton-McKay - Columbus, OH

Lunch & Learn On-site Seminars

These seminars allow McNaughton-McKay to keep our customers informed of the latest technology and products available from our vendors. Customers will gain an understanding of the applications and benefits from using these products. Seminars are presented by members of the McNaughton-McKay Engineering Group and may also include a sales presentation, technical information and review of application and installation considerations. **Remember that Lunch is on us!**

DRIVES Powerflex Drives Product Solutions CIP Motion and Integrated Safety Applications Armorstart (On-Machine) Family Products	POWER & ENERGY Power Monitoring Products Power Solutions Renewable Energy	PLC Modernization, Logix Processor Optimization Small Control Applications Migrating for Performance
MOTION Scalable Kinetix Motion Solutions CIP Motion and Integrated Safety Applications System Sizing with the Motion Analyzer Tool	INDUSTRIAL CONTROL Nema, IEC and Essential Component Products Sensing and Connectivity Products Update Machine Safeguarding Solutions	NETWORKING Ethernet Switch Basics Network Security for Wired LANs Wireless Technology for the Factory Floor
MECHANICAL Mechanical Technologies and Solutions Optimizing Control and Mechanical Systems System Cost / Value Analysis	SAFETY New Safety Functional Standards Hazard and Risk Assessments Rockwell Safety Product Selection Toolbox	HUMAN MACHINE INTERFACE What's New in Machine Information Mobile and Wireless HMI Solutions Digital Signage
POWERTRAIN Powertrain Ethernet Architecture Migration Power Media Cordset Product Family On-Machine Applications and Solutions Network Based Safety Systems	VISION AND TRACEABILITY Error Proofing and Traceability Products Utilize Video to Improve Plant Risk Harness the Power of Inspection-Less Vision to Improve Productivity	SOFTWARE Productivity and Configuration Software Tools Security, Remote Access, Asset Centre and Disaster recovery Manufacturing Intelligence (OEE & MES)

INTEGRATED SAFETY SOLUTIONS Lunch-n-Learn Video Series

Learn about our newest high-performance scalable safety product offerings that will save you **TIME** and **MONEY**.

INTEGRATED SAFETY SOLUTIONS VIDEO SERIES:

- Introduction to Machinery Safety Standards
- New Rockwell PowerFlex S4 and Kinetix ERS4 Advanced Safety
- New Rockwell L8-based GuardLogix Safety PLCs and New Safety I/O
 - New Rockwell Lightscreens and GuardLink Technology
 - New Ross Controls Safety Valves

TOTAL RUN TIME: 60 Minutes

This video series covers the latest technology and products available from our vendors. You will gain an understanding of the applications and benefits from using these products.

Videos are presented by members of the McNaughton-McKay Engineering Group and may also include technical information and review of application and installation considerations.

Discover how to easily develop safer and smarter machines that have higher productivity rates, better ergonomics, and less downtime.

Remember that Breakfast or Lunch is on us!

Contact your local McNaughton-McKay representative to schedule your preferred date and time.

**Please take advantage of this unique service available from McNaughton-McKay Electric Company!
 Contact your local McNaughton-McKay representative with your request.
 We look forward to joining you for lunch.**

Route this to others who might be interested in training. Don't see what you need here?
 Call us—we also develop tailored programs to suit individual needs.

**McNaughton-McKay strongly suggests that you make refundable travel and lodging arrangements.
 McNaughton-McKay reserves the right to alter course schedules, content, limit class size, reschedule,
 discontinue, or cancel courses. Pricing is subject to change without notice.**

www.mc-mc.com