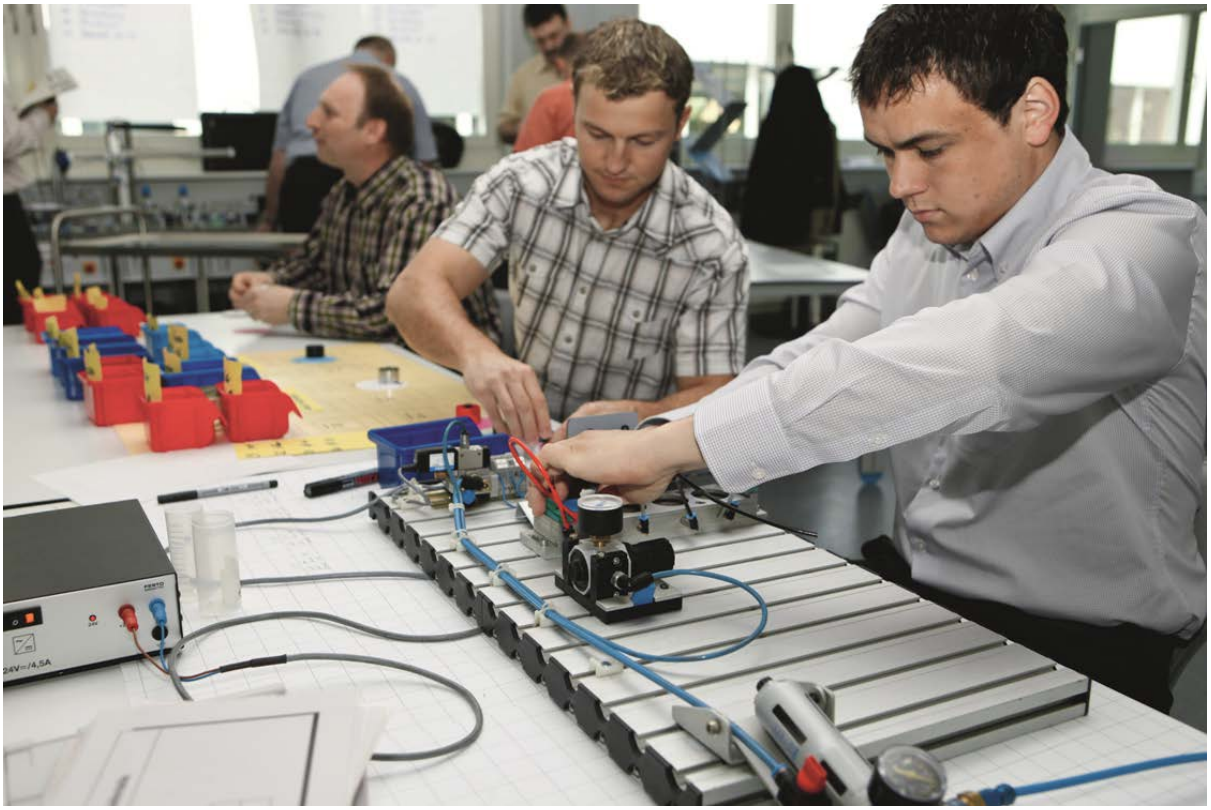
March 2 – 13, 2015

Advanced Manufacturing Training Courses at

Gateway Community & Technical College, KY and

Cincinnati State Technical and Community College, Workforce Development Center, OH

Workforce Skills Development



FESTO

Festo Advanced Manufacturing Technology Training Seminars for Workforce Development in the Greater Cincinnati Area

Trainings designed for

- ✓ machine operators
- ✓ factory technicians
- ✓ maintenance
- ✓ engineers
- ✓ training managers

Festo Didactic offers an advanced manufacturing training program for industry partners in the Greater Cincinnati area in the fields of DC and AC Electricity, Pneumatics and Hydraulics beginning Monday, March 2nd, 2015.

DC and AC Electricity trainings will be held at Gateway Community & Technical College (KY), Pneumatics and Hydraulics at Cincinnati State Technical and Community College, Workforce Development Center (OH).

These courses are trainings for automation technology fundamentals. Our didactical approach focuses on applied learning - therefore 70% of the training is dedicated to hands-on practice using real industrial components. We ensure the direct transfer of knowledge from the classroom to the factory floor.

The benefit of our trainings is the immediate improvement of productivity and product quality through a sustainable upgrade of your employees' skills and effectiveness.

Course Titles:	DC Electricity, AC Electricity, Pneumatics, Hydraulics	
Target group:	Machine Operators, Factory Technicians, Engineers, Training Managers Space is limited to 12 attendees per course	
Price[1]:	DC Electricity, two-day course	$950.00
	AC Electricity, two-day course	$950.00
	Pneumatics, two-day course	$950.00
	Hydraulics, three-day course	$1,350.00
Dates:	March 2nd – March 13th, 2015	
Time:	9:00 am - 4:00 pm each seminar day	
Location:	March 2nd – 5th:	Gateway Community & Technical College
	March 9th – 13th:	Cincinnati State Technical and Community College, Workforce Development Center

[1] Prices indicated above include certified instructor, equipment and training materials, and catering for coffee breaks and lunch. Participants are responsible for travel, hotel and other meal costs.

Training Topics:

Gateway Community & Technical College (KY)

Monday, March 2nd	DC Electricity (day 1/2)
Tuesday, March 3rd	DC Electricity (day 2/2)
Wednesday, March 4th	AC Electricity (day 1/2)
Thursday, March 5th	AC Electricity (day 2/2)

Cincinnati State Technical and Community College, Workforce Development Center (OH)

Monday, March 9th	Modern Industrial Pneumatics (day 1/2)
Tuesday, March 10th	Modern Industrial Pneumatics (day 2/2)
Wednesday, March 11th	Modern Industrial Hydraulics (day 1/3)
Thursday, March 12th	Modern Industrial Hydraulics (day 2/3)
Friday, March 13th	Modern Industrial Hydraulics (day 3/3)

Registration: Please register for our advanced manufacturing trainings by February 20th.

Discounts are available for booking multiple classes and/or multiple participants - please contact Carolin McCaffrey for details.

Please contact:

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Workforce Development Center

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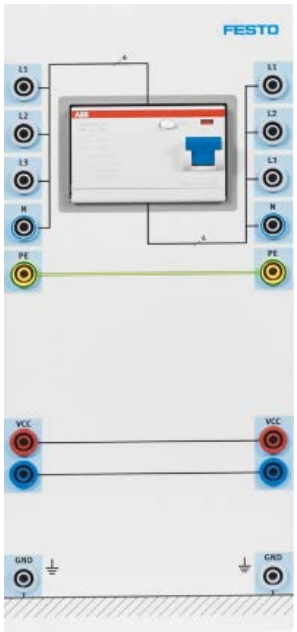
DC Electricity

In this course we will cover basic atomic theory, voltage, current and resistance. You will calculate, analyze, construct and verify simple series, parallel and series-parallel circuits. You will construct and verify proper operation of series, parallel and series-parallel circuits.

Contents	Atomic theory including law of charges Electrical terminology including voltage, current, resistance, power and energy Series resistive circuits Parallel resistive circuits Series-parallel resistive circuits
Outcomes	At the conclusion of the training, participants will be able to: • State and explain the basic parts of an atom • State and explain the laws of electrical charges • State and define various electrical parameters including voltage, current, resistance, power and energy • Calculate various values in a simple DC (series, parallel, and series-parallel) resistive circuits • Construct and verify proper operation of simple DC (series, parallel, and series-parallel) resistive circuits
Prerequisites	Technical understanding
Duration	2 Days



AC Electricity

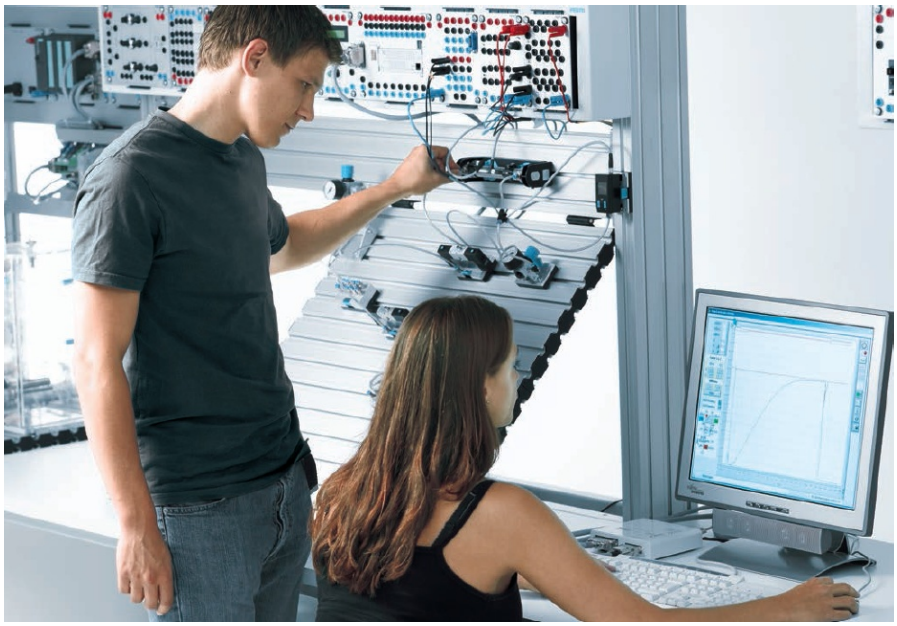
In this course we will cover AC generation, parts of a sine wave, inductive circuits, capacitive circuits and RLC circuits. You will calculate and analyze simple series, parallel and series-parallel AC inductive circuits. You will construct and verify proper operation of series, parallel and series-parallel AC RLC and capacitive circuits. You will calculate various single phase and three phase transformer circuits.

Contents	AC Sine Wave Generation Parts of an AC Sine Wave Inductors Capacitors RLC Circuits Single Phase Transformers Three Phase Transformers
Outcomes	At the conclusion of the training, participants will be able to: • State and explain AC Sine Wave Generation • State and explain various sine wave parameters • State and explain inductors • Calculate various values in a simple AC (series, parallel, and series-parallel) inductive, capacitive and RLC circuits • Construct and verify proper operation of simple AC (series, parallel, and series-parallel) inductive, capacitive and RLC circuits • Calculate various values in single and three phase transformer circuits
Prerequisites	DC Electricity
Duration	2 Days

Modern Industrial Pneumatics

The resources of the training course have been designed to fulfill the expectations of people who have the need to understand and apply the requirements of modern industrial pneumatics with real shop floor applications. The training course sets a good background for further automation trainings.

Contents	Single and Double Acting Cylinders Directional Control Valves Air Preparation Manifolds Flow Control Valves Troubleshooting Logic Circuits Actuator Conditions
Outcomes	At the conclusion of the training, participants will be able to: • Interpret and draw pneumatic symbols • Construct and troubleshoot pneumatic circuits • Determine root cause of component failure • Make speed adjustments to actuators • Explain the force/pressure/area relationship • Describe the different states an actuator can assume and the importance of each • Identify/explain function of pneumatic components
Prerequisites	Basic technical knowledge
Duration	2 Days



Modern Industrial Hydraulics

This course provides you with an insight into hydraulic components and their function. You will create and read circuit diagrams and set the pressure and position of hydraulic drives.

Contents	Equipment and circuit diagram symbols, reading and interpreting basic hydraulic circuit diagrams Physical principles of hydraulics Structure and mode of operation of basic components Measure volumetric flow and pressure Technology and characteristic data of valves and drive elements Intensive training for industrial practice: setting up systems in accordance with circuit diagrams, commissioning systems Fundamentals of proportional hydraulics Structure of simple relay controls
Outcomes	At the conclusion of the training, participants will be able to: • At the conclusion of the training, participants will be able to: • Design, assemble, test, and troubleshoot basic hydraulic circuits • Identify and describe the construction, design features, and operation of hydraulic components • Interpret technical specifications and data relating to hydraulic components and systems • Identify and explain graphical symbols for hydraulic components • Describe fundamentals of oil flow
Prerequisites	Basic technical understanding
Duration	3 Days