DuPont™ eLearning Suite

INDUSTRIAL SKILLS COURSES

Number in brackets denotes number of individual titles in the series.

API Training Provider Certification Program

Certified curriculums marked by an asterisk (*).

Electrical Maintenance*

AC/DC Theory (14)
- Current
- Voltage
- Resistance
- Ohm's Law
- Magnetism
- Electrical Measurement
- DC Circuits
- Inductance & Capacitance
- Alternating Current
- AC Measurement
- Capacitive Circuits
- Inductive Circuits
- Transformers
- Tuned Circuits

Applied DC Fundamentals (4)
- Voltage, Resistance & Current
- Ohm's Law & DC Circuits
- Electronic Components & Magnetism
- Electronic Schematics & Circuit Analysis

Basic Electronic Components & Their Measurement (3)
- Types & Diagrams
- Controls & Application
- Operation & Troubleshooting

DC Motor Controllers (2)
- Controller Function & Operation
- Maintenance & Troubleshooting

DC Motors (2)
- Basics & Internal Parts
- Maintenance & Troubleshooting

Electronic Circuits (3)
- Basic Principles
- Characteristics & Operation
- Logic Fundamentals, Types & Application

Industrial Electricity (7)
- Basic Principles
- Alternating Current
- Conductors
- Wiring
- Installation, Distribution & Lighting
- Generators & Motors
- AC Motor Control & Current Measurement

Mechanical Electrical Control Systems (7)
- Introduction to Control Schematics
- Creating Schematics
- Electrical Lockout
- Design & Troubleshooting
- Energy Management
- Electronic Controls
- Responsive Systems

Motor Controls (8)
- Basic Motor Controls & Relays
- Overload Relays
- Time Delay Relays
- Schematic Symbols
- Schematics & Wiring Diagrams
- Starting Methods for Squirrel Cage Motors
- Wye-Delta, Synchronous & Wound Rotor Controls
- Installing & Troubleshooting Control Systems

Motor Drives (6)
- Motor Drive Identification
- Open & Closed Loop Systems
- Variable Speed AC Drives
- Servo & Stepper Motors
- AC Motor Operation
- AC Drive Selection & Setup

Programmable Logic Controllers (5)
- Fundamentals
- Programming
- Inputs & Outputs
- Troubleshooting
- Communications & Advanced Programming

Using RSLogix™ (3)
- Configuring Hardware & Software
- Programming & Editing
- Testing & Troubleshooting

ControlLogix (6)
- Advanced Programming and Analog Devices
- Basic Instructions
- Creating and Using Tags and the Program Editor
- Introduction to RSLogix 5000 Software
- Introduction to the ControlLogix PLC Family
- PLC Troubleshooting

Instrumentation & Control*

Basic Process Control (9)
- Feedback Control
- Process Control Modes
- Process Characteristics
- Process Variables
- Instrumentation Symbols
- Instrument Loop Diagrams
- Piping Instrumentation Drawings
- Mechanical Connections
- Electrical Connections

Calibration & Test Equipment (6)
- Primary Calibration Standards
- Pneumatic Test Equipment
- Electronic Test Equipment
- Oscilloscopes
- Instrumentation Errors
- Instrumentation Calibration

Continuous Process Control (4)
- Principles of Continuous Control
- Applications of Heat Exchanger Control
- Applications of Distillation Control
- Applications of pH Control

Control Valves & Actuators (4)
- Basics & Function
- Types & Design
- Fundamentals & Selection
- Sizing & Installation

Electronic Maintenance (12)
- Solid State Devices
- Integrated Circuits & Op Amps
- Sensor & Transducer Principles
- Transmitters
- Transducers
- Controllers, Indicators & Recorders
- Tuning
- Sampling Systems & Gas Chromatograph Valves
- Gas Chromatograph Ovens & Controllers
- Spectroscopic Analyzers
- Electrochemical Analyzers
- Instrument Loop Troubleshooting

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Process Measurement (8)
- Temperature 1: Thermometers & Thermocouples
- Temperature 2: Resistance & Radiation Devices
- Pressure 1: Manometers & Gages
- Pressure 2: Indicators & Transmitters
- Level 1: Level Measurement & Gages
- Level 2: Level Indicators & Transmitters
- Flow 1: Flow Measurement & Overview
- Flow 2: Flow Sensors

Smart Digital Instrumentation (4)
- Understanding HART Protocol
- Applications of Smart Field Devices
- Configuring, Calibrating & Testing Smart Field Devices
- FOUNDATION™ Fieldbus

Fieldbus Process Control

Fieldbus (14)
- Fieldbus Curriculum Overview
- The Road to Fieldbus
- Fieldbus Wiring
- Fieldbus Devices
- Introduction to Configuration
- Introduction to Control Strategy
- Control Strategy
- Data Flow & Communications
- Fieldbus Calibration
- OPC
- Introduction to Troubleshooting
- Troubleshooting
- Fieldbus Maintenance
- Maintenance Exercises

FIELDBUS CENTER

The Fieldbus Center at Lee College
www.knowthebus.org

Mechanical Maintenance*

Boiler Operation & Control (5)
- Introduction to Boilers
- Boiler Design & Construction
- Boiler Feedwater & Steam
- Boiler Fuel & Air
- Boiler Operation

Centrifugal Pumps (5)
- Design & Function
- System Characteristics & Selection
- Operation & Maintenance
- Troubleshooting & Disassembly
- Reassembly & Installation

Clutches & Brakes (2)
- Types & Applications
- Troubleshooting

HVAC&R (7)
- Complete System Troubleshooting
- Air Handlers: Mechanical Systems
- Air Handlers: Calibration
- Chillers: Mechanical Components
- Chillers: Leak Check & Electrical
- Cooling Towers: Maintenance & Troubleshooting
- Condensers: Maintenance & Troubleshooting

Hydraulic Power Systems & Troubleshooting (2)
- Identification & Operation
- Troubleshooting Techniques

Hydraulics (7)
- Harnessing Hydraulic Power
- The Hydraulic Circuit
- Pumps & Actuators
- Control Valves
- Hydraulic Fluid
- Hydraulic System Safety & Maintenance
- Hydraulic System Troubleshooting

Industrial Bearings (3)
- Application & Technology
- Maintenance & Installation
- Troubleshooting

Industrial Drives (6)
- Belt Drives
- Chain Drives
- Enclosed Drive Systems
- Complete Drive Packages
- Gears & Gear Systems
- Shaft Joining & Coupling Devices

Industrial Hydraulics (4)
- Basic Principles & Application
- Types & Concepts
- Function & Operating Principles
- Maintenance & Troubleshooting

Industrial Seals (3)
- Types, Materials & Properties
- Gaskets & Packings: Inspection & Installation
- Mechanical Face Seals: Troubleshooting & Installation

Machinery Lubrication (3)
- Lubricating Oil: Types, Properties & Handling
- Lubricating Oil: Equipment & Procedures
- Lubricating Greases: Types, Applications & Equipment

Pneumatics (8)
- The Power of Compressed Air
- The Pneumatic Circuit
- Processing Air
- Using Compressed Air
- Pneumatic Control Valves
- Working Safely with Pneumatic Systems
- Pneumatic System Maintenance
- Troubleshooting Pneumatic Systems

Steam Traps (3)
- Types, Principles & Functions
- Sizing, Installation & Monitoring
- Diagnostics & Troubleshooting

Valve Basics (4)
- Shutoff Valve Designs & Application Consideration
- Selecting Shutoff Valves
- Installing Shutoff Valves
- Maintaining Shutoff Valves

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Pipefitting (11)
- Accessories & Specialty Equipment
- Flanged Pipe
- Hoses
- Introduction to Pipefitting
- Manual & Electric Threaded Pipe
- Measuring Pipe & Drawings
- Offsets
- Pipe Fittings & Joints
- Piping Systems & Standards
- Plastic Pipe
- Tubing

Maintenance Troubleshooting*

Maintenance Troubleshooting (5)
- Troubleshooting Procedures
- Power Distribution & Lighting Systems
- Motors & Motor Controls
- Pumps & Compressors
- Hydraulic Circuits & HVAC

Predictive Maintenance*

Advanced Vibration (2)
- AC Induction Motors
- AC Induction Motors Part I
- AC Induction Motors Part II

Machinery Oil Analysis (3)
- Fundamentals & Methods
- Strategies, Options & Testing
- Establishing an Effective Program

Thermography(3)
- Basic Operation
- Operating Procedures & Implementation
- Practical Applications

Ultrasonics (3)
- Basic Principles
- Leak Detection
- Mechanical & Electrical Inspection

Vibration Analysis (6)
- Predictive Maintenance & Machine Vibration
- Machine Vibration, Basic Theory
- Preparing for Data Collection
- The Data Processing System
- Data Collection
- Data Analysis

Operator Training*

Operator Inspection (9)
- Pneumatic System Inspection
- Vacuum System Inspection
- Air Compression System Inspection
- Fasteners & Equipment Structures Inspection
- Electrical Equipment Control System Inspection
- Motor Drive System Inspection
- Belt Drive, Chain Drive & Gear Box Inspection
- Clutches & Brakes Inspection
- Lubrication System Inspection

Physics: (1)
- Temperature & Heat

Machine Technology

Basic Engine Lathe (14)
- Identification of Parts & Care
- Engine Lathe Accessories
- Cutting Speeds & Feeds for Lathe-Ferrous, Non-Ferrous Plastics
- Grinding a Right-Hand Roughing Tool
- Grinding a Round-Nose Finishing Tool
- Mounting & Truing Work in the Four-Jaw Independent Chuck
- Three Methods of Facing Work to Length
- Straight Turning Work of Two Diameters
- Turning Between Centers
- Drilling, Boring & Reaming Work Held in a Lathe Chuck
- Turning a Radius
- Taper Turning on the Lathe
- Filing & Polishing on the Engine Lathe
- Knurling on the Lathe

Basic Machine Technology (10)
- Safety Procedures & Guidelines
- Hand Tools & Their Use
- The Use of Measuring Tools
- The Vertical Milling Machine: Parts & Operation
- Vernier Caliper & Vernier Protractor
- The Pedestal Grinder
- Sharpening Drill Bits by Hand or the Drill Press
- Drill Presses: Sensitive & Radial Arm
- Drill Press Operations
- Vertical Band Saws: Parts, Accessories & Operation

Computer Numerical Control (15)
- Introduction
- Preparing for Programming
- Absolute & Incremental Positioning
- One- & Two-Axis Linear Milling
- Three-Axis Linear & Circular Milling
- Completed Milling Programs
- Drilling, Boring & Spot Facing Subroutines
- Special Cycles
- Mirroring
- Quick Coding Procedures
- Polar Coordinate Programming
- Scaling & Engraving Programming
- Rotation
- Cutter

Basic Skills*

Gaging & Measurement (2)
- Types & Fundamentals
- Procedures & Operation

Mechanical Print Reading (4)
- Orthographic Projection
- Drawing Format & Dimensioning
- Drawing Types & Symbols
- Thread Specifications

Rigging (2)
- Equipment Basics
- Operations

Workplace Mathematics (3)
- Whole Numbers
- Fractions
- Decimals
- Introduction to Algebra

Workplace Reading (5)
- Basic Skills
- Literal Comprehension: Main Idea
- Literal Comprehension: Relationships
- Inference
- Study Skills

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