

# ClarityNET®

## Industrial Skills Courses

### Available

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

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**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

**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



**The Fieldbus Center**  
at Lee College  
[www.knowthebus.org](http://www.knowthebus.org)

## 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

## 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

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## Industrial Skills Courses Available

### Steam Traps (3)

- Types, Principles & Functions
- Sizing, Installation & Monitoring
- Diagnostics & Troubleshooting

### Valve Basics

- Shutoff Valve Designs & Application Consideration
- Selecting Shutoff Valves
- Installing Shutoff Valves
- Maintaining Shutoff Valves

### 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: Temperature & Heat (1)

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## 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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