**Industrial Technology Maintenance Curriculum (online only)**

**Mechanical Maintenance Technician or Electrical Maintenance Technician**

**Online:**

**Mechanical Maintenance Technician**

 **Maintenance Operations – (34 classes)**

Maintenance Operations

* Machine Operation
* Machine Monitoring and Documentation
* Troubleshooting Techniques
* Total Productive Maintenance (TPM)

Industrial Safety

* Safety Organization
* Personal Protective Equipment
* HAZCOM
* Electrical Safety
* Fire Safety
* Accident Response
* Workplace Ergonomics
* Workplace 6S

Mechanical Component Maintenance

* Basic Component Assembly
* Bolt Installation
* Precision Component Assembly
* Machine Screw Installation
* Clamping and Locking Devices
* Non-Threaded Component Assembly
* Powered Assembly
* Component Contamination
* Component Handling

Rigging techniques

* Rigging Concepts
* Lifting Devices
* Sling Types
* Wire Rope Slings
* Chain Slings
* Synthetic Slings
* Load Transport
* Cranes

Mechanical Print Reading

* Mechanical Print Reading
* Basic Part Dimensioning
* Assembly Drawings
* Precision Dimensioning

  **Basic Mechanical Systems – (21 classes)**

Dimensional Measurement

* Measurement Systems
* Calipers
* Micrometers
* Indicators and Gauging

Mechanical Drives 1

* Introduction to Mechanical Power Transmission
* Machine installation
* Performance Measurement
* Basic Shaft Alignment
* Basic V-belt drives
* Basic chain drives
* Basic gear drives
* Multiple shaft gear drives

Mechanical Drives 2

* Heavy Duty V-Belt Drives
* Lubrication Systems
* Chain Drive Troubleshooting
* V-Belt Troubleshooting
* Synchronous Belt Drive Troubleshooting
* Indicator Shaft Alignment
* Coupling Troubleshooting

Laser Shaft Alignment

* Laser Shaft Alignment Setup
* Laser Shaft Alignment Operation

**Basic Hydraulic Systems – (24 classes)**

Hydraulic Systems 1

* Introduction to Hydraulics
* Hydraulic Pumps
* Basic Hydraulic Circuits
* Hydraulic Pressure and Flow Concepts
* Hydraulic Pressure Control
* Hydraulic Flow Control
* Hydraulic Sequence Control

Hydraulic Systems 2

* Hydraulic DCV Applications
* Hydraulic Cylinder Applications
* Hydraulic Relief Valve Applications
* Hydraulic Pilot Operated Check Valves
* Hydraulic Accumulators

Hydraulics Troubleshooting 1

* Hydraulic Troubleshooting Concepts
* Troubleshooting Hydraulic Pumps
* Troubleshooting Hydraulic Actuators
* Troubleshooting Hydraulic Valves 1
* Troubleshooting Hydraulic Valves 2
* Troubleshooting Hydraulic Systems

Hydraulics Maintenance 1

* Hydraulic Filter Maintenance
* Hydraulic Fluid Maintenance
* Fittings and Seal Replacement
* Hydraulic Hose Replacement
* Steel Tubing Replacement
* Hydraulic Component Replacement

**Basic Pneumatic Systems – (18 classes)**

Pneumatic Systems 1

* Introduction to Pneumatic
* Pneumatic Power
* Basic Pneumatic Circuits
* Pneumatic Pressure Concepts
* Pneumatic Flow Concepts
* Pneumatic Speed Control Circuits
* Air Compressors

Pneumatic Systems 2

* Pneumatic DCV Applications
* Air Piloted Valves
* Pneumatic Component Maintenance
* Pneumatic Conditioning
* Vacuum Systems

Pneumatic Troubleshooting 1

* Introduction to Pneumatic Troubleshooting
* Troubleshooting Air Preparation
* Troubleshooting Actuators and Valves
* Troubleshooting Vacuum Systems
* Troubleshooting Pneumatic Systems

Pneumatic Maintenance 1

* Pneumatic System Fabrication

**Electrical Maintenance Technician**

**Maintenance Operations – (34 classes)**

Maintenance Operations

* Machine Operation
* Machine Monitoring and Documentation
* Troubleshooting Techniques
* Total Productive Maintenance (TPM)

Industrial Safety

* Safety Organization
* Personal Protective Equipment
* HAZCOM
* Electrical Safety
* Fire Safety
* Accident Response
* Workplace Ergonomics
* Workplace 6S

Mechanical Component Maintenance

* Basic Component Assembly
* Bolt Installation
* Precision Component Assembly
* Machine Screw Installation
* Clamping and Locking Devices
* Non-Threaded Component Assembly
* Powered Assembly
* Component Contamination
* Component Handling

Rigging techniques

* Rigging Concepts
* Lifting Devices
* Sling Types
* Wire Rope Slings
* Chain Slings
* Synthetic Slings
* Load Transport
* Cranes

Mechanical Print Reading

* Mechanical Print Reading
* Basic Part Dimensioning
* Assembly Drawings
* Precision Dimensioning

**Electrical Systems (36 classes)**

AC/DC Electrical Circuits 1

* Basic Electrical Circuits
* Electrical Measurements
* Electrical Power
* Electromagnetism
* Capacitance
* Circuits Applications
* Transformers

Electronic Sensors 1

* Electronic Sensors 1
* Electronic Sensors 2

Electric Motors

* Introduction to Electric Motors
* DC Motors
* Motor Performance Management
* Motor Power
* Single Phase AC Motors
* Single Phase AC Power
* AC Motors with capacitors
* Three-phase AC Induction Motors

Electric Motor Troubleshooting 1

* Troubleshooting DC Motors
* Troubleshooting AC Motors

Motor Control Troubleshooting

* Introduction to Electric Motor Control
* Manual Motor Starters
* Control Transformers
* Basic Control Circuits
* Magnetic Motor Control
* Component Troubleshooting
* Systems Troubleshooting
* Reversing Motor Circuits
* Sequence circuits
* Timer circuits

Electro-fluid Power Troubleshooting 1

* Relay Control
* Event Sequencing
* Time-based sequencing

Electrical System Maintenance 1

* Introduction to Electrical Control Wiring
* Electrical Panel Wiring
* Electro-pneumatic control wiring
* Industrial Soldering

**Electronic Control Systems (26 classes)**

Industrial Electronic Troubleshooting 1

* Introduction to electronics
* Power Supplies
* Power Conditioning
* Solid State Switches
* Proximity Sensors
* Analog Thermal Sensors
* Amplifier circuits
* Analog Pressure and Ultrasonic sensors
* Solid State power circuits
* SCR and Triac Control

Programmable Controller Troubleshooting 1

* Introduction to Programmable Controllers
* HMI Operation
* PLC Program Structure
* PLC Program Software
* PLC Program techniques
* PLC Timer and Counter Instructions
* Sequence Control
* Program Control Instructions
* Math and Data Move Instructions
* PLC Component Troubleshooting
* PLC Systems Troubleshooting

AC Variable Frequency Drives 1

* VFD Operation
* VFD Speed and Torque Control
* VFD Acceleration Control

Electrical Systems Maintenance 2

* PLC Wiring
* VFD Wiring