PROFESSIONAL DEVELOPMENT

LEARNING PLANS FOR MANUFACTURING JOB ROLES

Online Training from MACNY and Tooling U-SME offers a quick-start, progressive road map that allows manufacturers to build career paths for employees. This online training is intended to enhance your existing on the job training, to create a job progression plan and requires minimal preparation. It is efficient, effective training that has been developed with input from manufacturing experts.

FLEXIBLE AND CONVENIENT

Online classes are self-paced, typically taking 60 minutes to complete. They are easily and conveniently accessible on desktops and laptops, and on tablets and phones with the Tooling U-SME app.

CAREER PATHWAYS FOR MECHATRONICS JOB ROLES

Combine job roles for learning pathways, or offer single job roles for targeted learning. Large comprehensive programs also available.

Online Training offers:
- Content developed by industry experts
- Accessible anytime, anywhere
- Self-paced
- Predefined curriculum for each job role
- Engaging and interactive content
- Pre- and post-training knowledge assessments
- Access to Tooling U-SME’s Learning Management System (LMS)
- Guidance from our Client Success team, including advice, insights, and ideas built on best practices and years of experience

To begin your training program or for more information, call Eileen Donovan, Workforce Development Specialist, at 315.474.4201, ext. 22 or email edonovan@macny.org.
MECHATRONIC FUNDAMENTALS

Electrical Units
- Safety for Electrical Work
- Basic Measurement
- Basics of Tolerance
- Blueprint Reading
- Calibration Fundamentals
- Hole Standards and Inspection

Thread Standards and Inspection
- SSC Overview
- Lean Manufacturing Overview
- Ferrous Metals
- Introduction to Mechanical Properties
- Introduction to Metals

Introduction to Physical Properties
- Forces of Machines
- Introduction to Mechanical Systems
- Safety for Mechanical Work
- Approaches to Maintenance
- ISO 9001 Review

Bloodborne Pathogens
- Confined Spaces
- Fire Safety and Prevention
- Flammable/Combustible Liquids
- Hand and Power Tool Safety
- Intro to OSHA
- Lockout/Tagout Procedures

Noise Reduction and Hearing Conservation
- Personal Protective Equipment
- Powered Industrial Truck Safety
- Respiratory Safety
- Safety for Lifting Devices

SSD and Hazard Communication
- Walking and Working Surfaces
- Math Fundamentals
- Math: Fractions and Decimals
- Units of Measurement

ELECTRICAL PRODUCTION

Control Panel Functions for the CNC Lathe
- Control Panel Functions for the CNC Mill
- Introduction to CNC Machines
- AC Fundamentals
- Conductor Selection

DC Circuit Components
- Electrical Instruments
- Electrical Print Reading
- Introduction to Circuits
- Introduction to Magnetics
- NEC(R) Overview

Parallel Circuit Calculations
- Series Circuit Calculations
- Troubleshooting Essentials
- Heat Treatment of Steel
- Lubricant Fundamentals

Control Devices
- Distribution Systems
- Introduction to Electric Motors
- Limit Switches and Proximity Sensors
- Logic and Line Diagrams
- Reduced Voltage Starting

Relays, Contactors, and Motor Starters
- Algebra Fundamentals
- Geometry: Circles and Polygons
- Geometry: Lines and Angles
- Geometry: Triangles

Trigonometry: Sine, Cosine, Tangent
- Trigonometry: The Pythagorean Theorem
- Essentials of Communication
- Essentials of Leadership
- Overview of Soldering

MAINTENANCE PRODUCTION

Battery Selection
- Parallel Circuit Calculations
- Series Circuit Calculations
- Introduction to Fastener Threads
- Overview of Non-Threaded Fasteners
- Overview of Threaded Fasteners
- Threaded Fastener Selection

Tools for Threaded Fasteners
- Understanding Torque
- Fittings for Fluid Systems

Safety for Hydraulics and Pneumatics
- The Forces of Fluid Power
- Troubleshooting Essentials
- Heat Treatment of Steel
- Lubricant Fundamentals

Gear Applications
- Lubricant Fundamentals
- Mechanical Power Variables
- Spring Applications
- DC Motor Applications
- Distribution Systems
- Introduction to Electric Motors
- Logic and Line Diagrams
- Reduced Voltage Starting

Reversing Motor Circuits
- Solenoids
- UCS for Servomotors
- Symbols and Diagrams for Motors
- Intro to Machine Rigging
- Rigging Equipment
- Rigging Inspection and Safety
- Rigging Mechanics
- Algebra Fundamentals

Geometry: Circles and Polygons
- Geometry: Lines and Angles
- Geometry: Triangles

Trigonometry: Sine, Cosine, Tangent
- Trigonometry: The Pythagorean Theorem
- Essentials of Communication
- Essentials of Leadership

AUTOMATION TECHNICIAN

Introduction to Fastener Threads
- Overview of Non-Threaded Fasteners
- Overview of Threaded Fasteners
- Threaded Fastener Selection
- Tools for Threaded Fasteners
- Understanding Torque
- Fittings for Fluid Systems

Introduction to Fluid Conductors
- Introduction to Hydraulic Components
- Introduction to Pneumatic Components
- Safety for Hydraulics and Pneumatics
- The Forces of Fluid Power

Belt Drive Applications
- Clutch and Brake Applications
- Gear Applications
- Mechanical Power Variables
- Basics of Ladder Logic
- Data Manipulation
- Hand-Held Programmers for PLCs

Hardware for PLCs
- Introduction to PLCs
- Networking for PLCs
- Numbering Systems and Codes
- Overview of PLC Registers
- PID for PLCs
- PLC Counters and Timers
- PLC Inputs and Outputs
- PLC Installation Practices

PLC Program Control Instructions
- Sequencer Instructions for PLCs
- Intro to Machine Rigging
- Rigging Equipment
- Rigging Inspection and Safety
- Rigging Mechanics
- Concepts of Robot Programming

End Effectors
- Robot Axes
- Robot Components
- Robot Installations
- Robot Maintenance
- Robot Safety
- Robot Sensors
- Robot Troubleshooting
- Vision Systems

ELECTRICAL TECHNICIAN

Battery Selection
- Introduction to Fastener Threads
- Overview of Non-Threaded Fasteners
- Overview of Threaded Fasteners

Threaded Fastener Selection
- Tools for Threaded Fasteners
- Understanding Torque
- Fittings for Fluid Systems

Introduction to Fluid Conductors
- Introduction to Hydraulic Components
- Introduction to Pneumatic Components
- Safety for Hydraulics and Pneumatics
- The Forces of Fluid Power

Belt Drive Applications
- Clutch and Brake Applications
- Gear Applications
- Mechanical Power Variables
- Basics of Ladder Logic
- Data Manipulation
- Hand-Held Programmers for PLCs

AC Motor Applications
- DC Motor Applications
- Distribution Systems
- Reduced Voltage Starting
- Reversing Motor Circuits
- Solenoids
- UCS for Servomotors

Symbols and Diagrams for Motors
- Intro to Machine Rigging
- Rigging Equipment
- Rigging Inspection and Safety
- Rigging Mechanics

FLUID SYSTEMS TECHNICIAN

Control Panel Functions for the CNC Lathe
- Introduction to CNC Machines
- AC Fundamentals
- AC Power Sources
- Conductor Selection
- DC Circuit Components
- DC Power Sources
- Electrical Instruments

Electrical Print Reading
- Introduction to Circuits
- Introduction to Magnetism
- NEC(R) Overview
- Actuator Applications
- Contamination and Filter Selection
- Hydraulic Control Valves
- Hydraulic Fluid Selection

Hydraulic Power Sources
- Hydraulic Power Variables
- Hydraulic Principles and System Design
- Hydraulic Schematics and Basic Circuit Design
- Pneumatic Control Valves
- Pneumatic Power Sources
- Pneumatic Power Variables

Pneumatic Schematics and Basic Circuit Design
- Benchmark and Layout Operations
- Control Devices
- Distribution Systems
- Limit Switches and Proximity Sensors

Relays, Contactors, and Motor Starters
- Electrical Safety for Welding
- GM&W Applications
- Intro to Welding
- Welding Processes
- Overview of Soldering

Oxyfuel Welding Applications
- Plasma Cutting
- PPE for Welding
- SMAW Applications
- Welding Fumes and Gases Safety
- Welding Safety Essentials
- What Is Oxyfuel Welding?