MECHATRONICS

PROFESSIONAL DEVELOPMENT

LEARNING PLANS FOR MANUFACTURING JOB ROLES

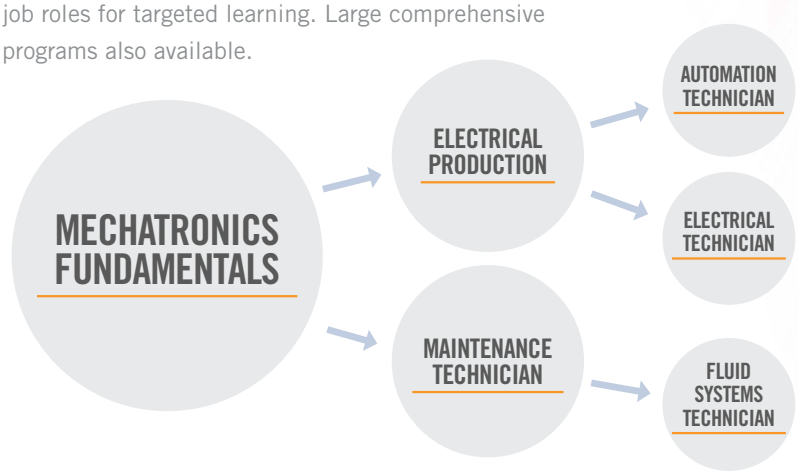
Online Training from MACNY and Tooling U-SME offers a quick-start, progressive road map that allows manufacturers to build career paths for employees. This online training is intended to enhance your existing on the job training, to create a job progression plan and requires minimal preparation. It is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

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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**.

Choose a starting point based on employee's experience or company goals for a quick-start training solution.

MECHATRONICS

MECHATRONICS FUNDAMENTALS

- Electrical Units
- Safety for Electrical Work
- Basic Measurement
- Basics of Tolerance
- Blueprint Reading
- Calibration Fundamentals
- Hole Standards and Inspection
- Thread Standards and Inspection
- 5S 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
- SDS 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 Magnetism
- NEC(R) Overview
- Parallel Circuit Calculations
- Series Circuit Calculations
- Troubleshooting
- Essentials of Heat Treatment of Steel
- Lubricant Fundamentals
- Control Devices
- Distribution Systems
- Introduction to Electric Motors
- Limit Switches and Proximity Sensors
- Logic and Line Diagrams
- 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
- Introduction to Fluid Conductors
- Introduction to Hydraulic Components
- Introduction to Pneumatic Components
- Preventive Maintenance for Fluid Systems
- Safety for Hydraulics and Pneumatics
- The Forces of Fluid Power
- Troubleshooting
- Essentials of Heat Treatment of Steel
- Nonferrous Metals
- Bearing Applications
- Belt Drive Applications
- Clutch and Brake Applications
- Gear Applications
- Lubricant Fundamentals
- Mechanical Power Variables
- Spring Applications
- AC Motor Applications
- DC Motor Applications
- Distribution Systems
- Introduction to Electric Motors
- Logic and Line Diagrams
- Reduced Voltage Starting
- Reversing Motor Circuits
- Solenoids
- Specs 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
- Bearing Applications
- Belt Drive Applications
- Clutch and Brake Applications
- Gear Applications
- Mechanical Power Variables
- Spring Applications
- Basic Programming for PLCs
- Basics of Ladder Logic
- Data Manipulation
- Hand-Held Programmers of 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
- Nonferrous Metals
- Bearing Applications
- Belt Drive Applications
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- Gear Applications
- Mechanical Power Variables
- Spring Applications
- AC Motor Applications
- DC Motor Applications
- Distribution Systems
- Reduced Voltage Starting
- Reversing Motor Circuits
- Solenoids
- Specs 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
- Benchwork and Layout Operations
- Control Devices
- Distribution Systems
- Limit Switches and Proximity Sensors
- Relays, Contactors, and Motor Starters
- Electrical Safety for Welding
- GMAW Applications
- Introduction to Welding
- Introduction to 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?

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