

CERTIFIED MANUFACTURING ASSOCIATE

Comprehensive Training Program

DEVELOP THE SKILLS NECESSARY FOR A SUCCESSFUL CAREER IN MANUFACTURING

The Certified Manufacturing Associate training program helps prepare dislocated workers, underemployed individuals, veterans, and more start a new career in manufacturing. The 25-class online training program from Tooling U-SME can be bundled with the nationally recognized Certified Manufacturing Associate credential. This training program prepares individuals for high-demand, entry-level careers including assemblers, manufacturing associates, and production laborers. It can also be used by manufacturers as an effective onboarding program for new employees.

SHORT-TERM, COMPREHENSIVE TRAINING

Online classes from Tooling U-SME provide the best manufacturing content developed by industry experts. The information is presented in an engaging and interactive format for maximum effectiveness, and pre-and post-assessments measure a student's increased knowledge.

Classes are self-paced, typically taking 60 minutes to complete. The 25-class training program can be completed in less than a few weeks. They are conveniently accessible anytime, anywhere on desktops and laptops, and on tablets and phones with the Tooling U-SME app.

BUILD A COMPREHENSIVE FOUNDATION OF KNOWLEDGE

This program introduces basic concepts in the areas needed for a successful career as a Certified Manufacturing Associate:

Additive Manufacturing	Measurement and Inspection
Blueprint Reading	Quality
CNC	Robotics
Inspection	Safety
Lean	Troubleshooting
Math Fundamentals	

EARN AN INDUSTRY-DRIVEN CERTIFICATION

The SME Certified Manufacturing Associate (CMfgA) credential demonstrates that an individual has foundational manufacturing knowledge and may be an ideal candidate for entry-level employment. It is the first step toward a lifelong career in an industry where there is opportunity for advancement and well-paying jobs.

sme.org/cmfga



CERTIFIED MANUFACTURING ASSOCIATE TRAINING PROGRAM

Complete Class List

Introduction to Additive Manufacturing 111
Introduction to CNC Machines 201
Introduction to Assembly 101
Safety for Assembly 211
Tools for Threaded Fasteners 235
Basic Measurement 101
Basics of Tolerance 121
Blueprint Reading 131
5S Overview 151
Troubleshooting 181
Quality Overview 111
Introduction to Robotics 201
Robot Safety 211

Bloodborne Pathogens 161
Intro to OSHA 101
Ergonomics 102
Personal Protective Equipment 111
Lockout/Tagout Procedures 141
SDS and Hazard Communication 151
Hand and Power Tool Safety 201
Fire Safety and Prevention 181
Math Fundamentals 101
Math: Fractions and Decimals 111
Units of Measurement 112
Lean Manufacturing Overview 101



PROFESSIONAL DEVELOPMENT

LEARNING PLANS FOR MANUFACTURING JOB ROLES

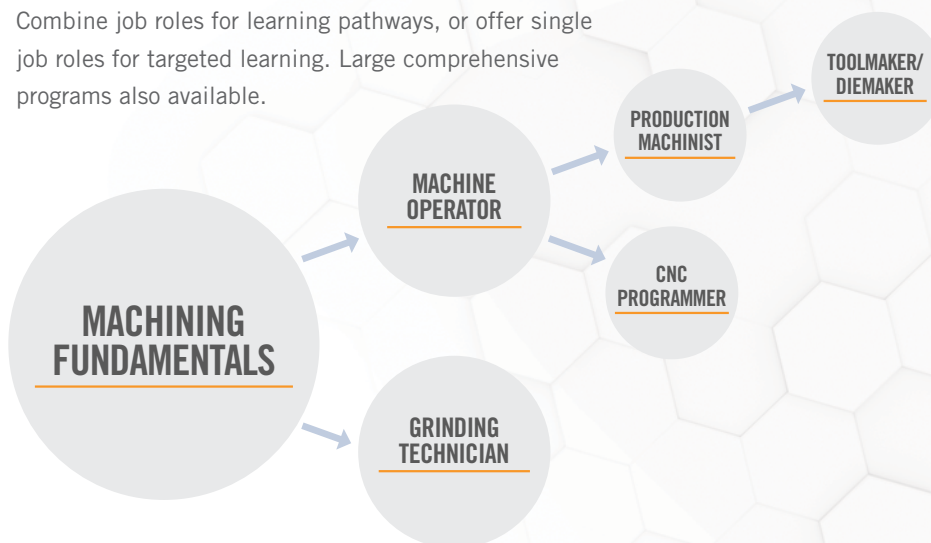
Online Training from Polaris MEP and Tooling U-SME offers a quick-start, progressive road map that allows manufacturers to build career paths for employees. This online training is intended to enhance your existing on the job training, to create a job progression plan and requires minimal preparation.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

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

MACHINING

MACHINING FUNDAMENTALS

Basic Measurement	Essentials of Heat Treatment of Steel	Overview of Machine Tools	Noise Reduction and Hearing Conservation	Geometry: Lines and Angles
Basics of Tolerance	Ferrous Metals	ISO 9001 Review	Personal Protective Equipment	Geometry: Triangles
Blueprint Reading	Introduction to Mechanical Properties	Bloodborne Pathogens	Powered Industrial Truck Safety	Math Fundamentals
Calibration Fundamentals	Band Saw Operation	Fire Safety and Prevention	Safety for Lifting Devices	Math: Fractions and Decimals
Hole Standards and Inspection	Basic Cutting Theory	Hand and Power Tool Safety	SDS and Hazard Communication	Trigonometry: Sine, Cosine, Tangent
Thread Standards and Inspection	Cutting Processes	Intro to OSHA	Walking and Working Surfaces	Units of Measurement
5S Overview	Introduction to Metal Cutting Fluids	Lockout/Tagout Procedures		
Lean Manufacturing Overview	Metal Cutting Fluid Safety			

GRINDING TECHNICIAN

Basic Grinding Theory	Grinding Nonferrous Metals	Setup for the Cylindrical Grinder	Surface Texture and Inspection	Chucks, Collets, and Vises
Basics of the Centerless Grinder	Grinding Processes	Setup for the Surface Grinder	Metrics for Lean	Clamping Basics
Basics of the Cylindrical Grinder	Grinding Safety	Surface Grinder Operation	Process Flow Charting	Locating Devices
Basics of the Surface Grinder	Grinding Variables	Basics of G Code Programming	SPC Overview	Supporting and Locating Principles
Centerless Grinder Operation	Grinding Wheel Geometry	Introduction to CNC Machines	Strategies for Setup Reduction	
Cylindrical Grinder Operation	Grinding Wheel Materials	Introduction to Fastener Threads	Troubleshooting	
Dressing and Truing	Introduction to Grinding Fluids	Introduction to GD&T	Essentials of Communication	
Grinding Ferrous Metals	Setup for the Centerless Grinder	Major Rules of GD&T	Essentials of Leadership	

MACHINE OPERATOR

Basics of G Code Programming	Coordinates for the CNC Lathe	SPC Overview	Manual Mill Operation	Clamping Basics
Basics of the CNC Lathe	Coordinates for the CNC Mill	Benchwork and Layout Operations	Manual Mill Setup	Locating Devices
Basics of the CNC Mill	Introduction to CNC Machines	Engine Lathe Basics	Classification of Steel	Supporting and Locating Principles
Control Panel Functions for the CNC Lathe	Offsets on the CNC Lathe	Engine Lathe Operation	Intro to EDM	
Control Panel Functions for the CNC Mill	Offsets on the CNC Mill	Engine Lathe Setup	Safety for Metal Cutting	
	Introduction to Fastener Threads	Holemaking on the Manual Mill	Machine Guarding	
	Surface Texture and Inspection	Manual Mill Basics	Chucks, Collets, and Vises	

CNC PROGRAMMER

Calculations for Programming the Lathe	Creating a CNC Milling Program	Introduction to GD&T	Introduction to Metals	Automated Systems and Control
Calculations for Programming the Mill	Creating a CNC Turning Program	Major Rules of GD&T	Speed and Feed for the Lathe	Robot Axes
Canned Cycles for the Lathe	Introduction to CAD and CAM for Machining	Intro to Six Sigma	Speed and Feed for the Mill	
Canned Cycles for the Mill	In-Line Inspection Applications	Metrics for Lean	Quality and Customer Service	

PRODUCTION MACHINIST

Calculations for Programming the Lathe	Creating a CNC Turning Program	Troubleshooting	Cutting Tool Materials	Speed and Feed for the Lathe
Calculations for Programming the Mill	Introduction to GD&T	Taper Turning on the Engine Lathe	Drill Tool Geometry	Speed and Feed for the Mill
Canned Cycles for the Lathe	Major Rules of GD&T	Threading on the Engine Lathe	Impact of Workpiece Materials	Essentials of Communication
Canned Cycles for the Mill	Metrics for Lean	ANSI Insert Selection	Lathe Tool Geometry	Essentials of Leadership
Creating a CNC Milling Program	Process Flow Charting	Basic Cutting Theory	Mill Tool Geometry	
	Strategies for Setup Reduction	Carbide Grade Selection	Optimizing Tool Life and Process	

TOOLMAKER AND DIEMAKER

Basic Grinding Theory	Dressing and Truing	Grinding Safety	Introduction to Grinding Fluids	Die Cutting Variables
Basics of the Cylindrical Grinder	Grinding Ferrous Metals	Grinding Variables	Setup for the Cylindrical Grinder	Material Tests for Welding
Basics of the Surface Grinder	Grinding Nonferrous Materials	Grinding Wheel Geometry	Setup for the Surface Grinder	Fixture Design Basics
Cylindrical Grinder Operation	Grinding Processes	Grinding Wheel Materials	Surface Grinder Operation	

— New content is always being added. Check with your representative for the most current list of classes. —



PROFESSIONAL DEVELOPMENT

LEARNING PLANS FOR MANUFACTURING JOB ROLES

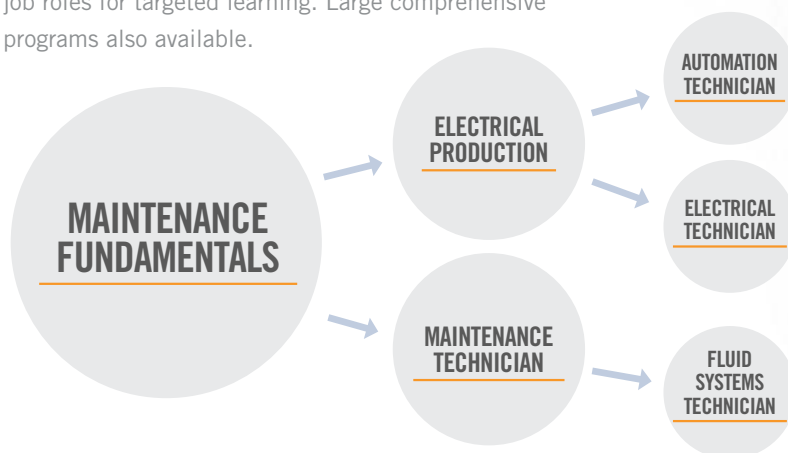
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MAINTENANCE

MAINTENANCE 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
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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
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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
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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
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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 Clutch and Brake Applications 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
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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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SMART MANUFACTURING



PROFESSIONAL DEVELOPMENT

SAFER, FASTER, MORE EFFICIENT MANUFACTURING WITH SMART MANUFACTURING

Manufacturing is quickly evolving and now requires new knowledge and skills. Technologies such as digital security, robotics, IIOT solutions, and 5G networks and infrastructure are changing the industry and the way manufacturers work, creating demand for workers who are skilled in these advanced technologies. Forward-thinking manufacturers are investing in training programs to build the Industry 4.0 capabilities needed to remain competitive

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.

Online Training offers:

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EFFECTIVE COMBINATION OF CLASSES

This Smart Manufacturing training program offers a comprehensive overview of the competencies needed to take advantage of the smart manufacturing technologies that are driving the industry forward. This series includes the following classes:

ADDITIVE MANUFACTURING

Introduction to Additive Manufacturing
Additive Manufacturing Safety
The Basic Additive Manufacturing Process
Additive Manufacturing Methods and Materials
Introduction to Hybrid Manufacturing
Rapid Prototyping
Additive Manufacturing: Prototype to Production
Design for Additive Manufacturing
Additive Manufacturing Materials Science
Integrating Additive Manufacturing with Traditional Manufacturing
Additive Manufacturing as a Secondary Process

Nondestructive Testing for Additive Manufacturing
The Additive Manufacturing Supply Chain
Managing the Additive Manufacturing Supply Chain
Hybrid Manufacturing with Directed Energy Deposition
Design for Fused Deposition Modeling
Design for Directed Energy Deposition
Design for Binder Jetting

INDUSTRIAL INTERNET OF THINGS

Cybersecurity for Manufacturing Basics
Cybersecurity for Manufacturing: Malware Overview
Introduction to the Industrial Internet of Things

Data Collection Fundamentals
Automatic Identification Technology
Cybersecurity for Manufacturing: Hacking Overview
Cybersecurity for Manufacturing: Wireless Networks
Introduction to Digital Networks
Data Collection: Inventory and Maintenance
Introduction to Digital Twin
Introduction to Digital Thread
Introduction to Machine Learning and Artificial Intelligence
Machine Learning and Artificial Intelligence Applications

ROBOTICS

Robot Components

Applications for Robots
Automated Systems and Control
Robot Axes
Robot Maintenance
Introduction to Robotics
Robot Safety
Robotic Drives, Hardware, and Components
End Effectors
Robot Installations
Robotic Control Systems
Industrial Network Integration
Introduction to Collaborative Robots
Robot Sensors
Vision Systems
Robot Troubleshooting
Concepts of Robot Programming

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