TECHNICAL CERTIFICATION

Comprehensive Training Program

Prepare for SME's Certified Manufacturing Technologist (CMfgT) exam and/or Certified Manufacturing Engineer (CMfgE) with online classes from Tooling U-SME. It's quality manufacturing content developed by industry experts, presented in an engaging and interactive format for maximum effectiveness.

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

Certified Manufacturing Technologist (CMfgT)

The CMfgT benefits both new and experienced manufacturing engineers who don't have other industry credentials. The CMfgT recognizes and validates individuals' understanding of the fundamentals of manufacturing. Pursuing a CMfgT certification requires a minimum of four years of combined manufacturing-related education and/or work experience.

sme.org/cmfgt

Certified Manufacturing Engineer (CMfgE)

The CMfgE is ideal for individuals who have advanced manufacturing engineering experience, who are in a leadership position, or who support manufacturing practices at a manufacturing organization.

Pursuing a CMfgE credential requires a minimum of eight years of combined manufacturing-related education and work experience (a minimum of four years must be work experience). A current Certified Manufacturing Technologist (CMfgT) credential with seven years combined manufacturing education and work experience also qualifies.

sme.org/cmfge

TECHNICAL CERTIFICATION CLASSES

Complete Class List

Manufacturing Foundations
Units of Measurement
Algebra Fundamentals
Geometry: Lines and Angles
Geometry: Triangles
Geometry: Circles and Polygons
Trigonometry: The Pythagorean Theorem
Trigonometry: Sine, Cosine, Tangent
Statistics
Concepts of Calculus
Electrical Units
Introduction to Circuits
AC Fundamentals
Series Circuit Calculations
Parallel Circuit Calculations
Blueprint Reading
Forces of Machines
Production System Design and Development
Personal Protective Equipment
SDS and Hazard Communication
Bloodborne Pathogens
Flammable/Combustible Liquids
Ergonomics
Hand and Power Tool Safety
Manufacturing Management

Manufacturing Process Application
Manufacturing Process Applications: Part I
Manufacturing Process Applications: Part II
Intro to Assembly
Introduction to Physical Properties
Introduction to Mechanical Properties
Introduction to Metals
Introduction to Plastics
Introduction to Ceramics
Introduction to Composites
Polymer Composite Processes
Classification of Steel
Essentials of Heat Treatment of Steel
Ferrous Metals
Nonferrous Metals
Thermoplastics
Thermosets
Cutting Processes
Overview of Machine Tools
Basic Cutting Theory
Introduction to Welding Processes

Design & Development
Introduction to Additive Manufacturing
The Basic Additive Manufacturing Process
Applied and Engineering Sciences
Introduction to CAD and CAM for Machining
The Forces of Fluid Power
Introduction to Hydraulic Components
Introduction to Pneumatic Components
Introduction to GD&T
3D Laser Scanners
Power Transmission Components
Lathe Tool Geometry
Mill Tool Geometry
Drill Tool Geometry
Basics of Siemens PLCs
Product Design and Development
Process Design and Development
Equipment/Tool Design and Development
Quality and Customer Service
Fabrication Process
Fixture Design Basics
Introduction to Workholding

Digital Enterprise
Total Productive Maintenance
Approaches to Maintenance
Industrial Network Integration
Robot Sensors
Cybersecurity for Manufacturing Basics
Cybersecurity for Manufacturing: Malware Overview
Introduction to the Industrial Internet of Things
Data Collection Fundamentals
Cybersecurity for Manufacturing: Hacking
Cybersecurity for Manufacturing: Wireless 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

Automated Systems & Controls
Introduction to CNC Machines
Introduction to PLCs
Quality Overview
Introduction to Robotics
Robot Safety
Robot Control Systems
Introduction to Digital Networks
Introduction to Digital Enterprise Strategy

Quality
Basic Measurement
Nondestructive Testing
Troubleshooting
Total Quality Management Overview
Six Sigma Goals and Tools
ISO 9001: 2015 Review
Conducting an Internal Audit

Continuous Improvement
5S Overview
Cell Design and Pull Systems
SPC Overview
Process Flow Charting
Strategies for Setup Reduction
Value Stream Mapping: The Current State
Value Stream Mapping: The Future State
Developing a Lean Culture
Continuous Process Improvement: Managing Flow
Continuous Process Improvement: Identifying and Eliminating Waste
Management Tools: Product and Process Design
Transforming Lean into Business Results
Measuring Lean Systems

Business Acumen
Managing the Additive Manufacturing Supply Chain
Intro to Supply Chain Management
Data and Design Management for Digital Enterprises
Personal Effectiveness
Essentials of Leadership
Essentials of Communication
Basics of Manufacturing Costs
Conflict Resolution Principles
Conflict Resolution for Different Groups