class catalog
online classes | certifications | books & videos
toolingu.com

training for educators
how can Tooling U-SME work for you?

Blended Learning
Tooling U-SME believes that online training cannot stand alone. All of our classes are intended to be a component of a blended learning solution. Using Tooling U-SME online curriculum and application training at your facility is an effective way to reach different audiences, increase enrollment, and add flexibility to your program.

Tooling U-SME partners with educational institutions, training centers, and workforce development agencies throughout the country to deliver flexible hybrid programs that integrate Tooling U-SME online curriculum and hands-on instruction.

High School Programs
Secondary institutions use Tooling U-SME to teach core theory and fundamental concepts in conjunction with textbooks, lectures, and hands-on lab time. Through using the Tooling U-SME system, instructors can address different learning styles, educational levels, and students with special needs with one powerful online tool.

WIA-At Risk Youth Training
At risk youth programs can use Tooling U-SME and a mentor/coach from a local resource to help students complete secondary education, obtain occupation skills, and advance along career pathways.

Adult Education Programs
Technical High Schools and Community Colleges use Tooling U-SME to offer flexibility to adult learners and continuing education students. By scheduling online classes and then providing open lab hours to complete hands-on lessons, students have the flexibility to work while taking classes.

High School Bridge/Dual Credit Programs
Community and Technical Colleges use Tooling U-SME to reach students from outlying districts to deliver high school bridge and dual credit programs. Flexible lab hours are available to complete the hands-on portion of the program.

Community College Certificate/Degree Programs
Post-secondary students can access self-paced Tooling U-SME classes to fulfill theory based portions of degree and certificate programs. Instructors can offer flexible lab hours to complete hands-on instruction. Hybrid programs using Tooling U-SME can expand enrollment and offer convenience and flexibility for both students and instructors.

Business and Industry Testing & Training
In addition to our modular training classes, Tooling U-SME offers technical skills assessments to help determine skills gaps and deliver individualized training outlines for students. Tooling U-SME content is an excellent component in a customized training solution. Design a curriculum by selecting a series of Tooling U-SME classes that most effectively address company specific training needs.

Displaced Worker Training
Retraining the workforce is an ever growing need. Tooling U-SME can be integrated into fast-track training programs to deliver curriculum that aligns to national standards in a flexible format.

Trade Association Training Programs
Regional and national trade associations have partnered with Tooling U-SME to offer industrial training resources to member companies. The LMS of Tooling U-SME allows for a training hierarchy and provides data for both individuals and groups to assist with grant reporting requirements.
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Tooling U-SME offers assessments, certifications, and certificate programs that help the manufacturing community benchmark learning against objectives. Our programs, developed by a range of experienced industry professionals, validate the knowledge and skills of individuals to ensure they are well-equipped to meet the requirements for their manufacturing profession.

**ASSESSMENTS**

**Online Assessments**
Assess machining, welding and fabrication, maintenance, assembly and foundational skills, and much more.

**Practice and Self-Evaluation Tests**
Validate manufacturing technology, manufacturing engineering, and electronic/electrical engineering technology skills to ensure employees are meeting industry standards in these fields.

**Green Manufacturing Outcome Assessments**
Identify areas of success and improvement related to green manufacturing initiatives.

**Online Review Programs**
Provide essential review of key concepts related to Certified Manufacturing Technologist (CMfgT) and Lean Bronze Certification, and evaluate skills with the pre- and post-test tools.
CERTIFICATIONS AND CERTIFICATES

Credentials
Tooling U-SME has been a trusted source in manufacturing education for over 80 years. Our integrity and commitment ensures we stay aligned to national credentials including the SME Lean, Certified Manufacturing Engineer and Certified Manufacturing Technologist, National Institute for Metalworking Skills (NIMS), Manufacturing Skill Standards Council (MSSC), American Welding Society (AWS), Siemens Mechatronics certifications and can also be mapped to individual or state curriculum requirements.

Lean Certification:
SME, along with three other partners – Association for Manufacturing Excellence (AME), American Society for Quality (ASQ), and the Shingo Prize for Operational Excellence – have formed an alliance to establish the standard for continuing manufacturing improvement and Lean practices.

> **Bronze Level:** Begins the industry-leading Lean Certification program and validates employees’ tactical Lean experience and solid understanding of Lean principles and tools.

> **Silver Level:** Expands upon employees’ knowledge and understanding of Lean principles and tools. Silver level candidates should be fully capable of orchestrating the transformation of a complete value stream.

> **Gold Level:** Focuses on the strategic transformation of the enterprise. Gold level candidates have sufficient Lean experience and knowledge to teach Lean strategy and leadership, and completely transform an organization.

Certified Manufacturing Technologist (CMfgT)
The CMfgT certification primarily benefits new manufacturing engineers and experienced manufacturers without other credentials. Pursuing a CMfgT certification requires a minimum of four years combined manufacturing-related education and/or work experience.

Certified Manufacturing Engineer (CMfgE)
Professionals who earn a CMfgE demonstrate a comprehensive knowledge of manufacturing processes and practices. CMfgE candidates must have a minimum of eight years of combined manufacturing-related education and/or work experience, including a minimum of four years of work experience. A CMfgT with a minimum of seven years manufacturing-related work experience and/or education also qualifies.
knowledge edgeSM

Knowledge EdgeSM strengthens your manufacturing training and skills development by offering comprehensive, industry-leading expertise with validated content you can tailor to meet your specific objectives, and increases learning outcomes by offering instructional materials across a variety of media platforms.

Less time searching for answers. More time building on them. Knowledge EdgeSM offers the greatest depth of educational manufacturing content available anywhere. Now you can optimize the time your students spend in class by assigning learning materials that enhance and/or replace lecture periods.

The exact information you need, exactly when you need it. Knowledge EdgeSM content is web-based, available 24/7, and allows you to select all or individual portions of books, videos, technical papers, and other educational content in the library. This enables you to build unique reference and learning materials to maximize the power of your training.

Teach the way students learn best. No two people learn alike. Knowledge EdgeSM tools are available in a variety of formats — including text, graphics, and video — for personalized instruction.

Expertise you can bank on. Knowledge EdgeSM is an independent and unbiased source for the best practices in manufacturing. Educational and reference materials are authored only by leading industry experts, and their work is carefully vetted for accuracy and utility.

Request a free demo at toolingu.com/knowledge.
Knowledge Edge℠ features over 1,200 eBooks and individual chapters in downloadable format, over 700 videos and video clips available on demand, more than 16,000 technical papers, and over 10,000 knowledge entries in the Manufacturing Knowledge Base wiki.

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ASSEMBLY/FINAL STAGE PROCESS

A Guide to High Performance Powder Coating
Affordable Automation for Small & Medium Facilities
Brazing & Soldering
Electrocoat Paint Finishing Defects
Fastening & Assembly
Finishing Systems Design and Implementation
Getting Factory Automation Right (The First Time)
Liquid Paint Finishing Defects
Managing a Paint Shop
Painting & Powder Coating
Plating & Surface Coatings
Successful Assembly Automation

COMPOSITES PROCESSING

Automated Composite Layup & Spray Up
Composite Materials (thermoset fiber-reinforced composites; thermoplastics)
Composite Materials & Manufacturing
Composite Tooling Design
Composites Post Fabrication & Joining
Compression Molding
Filament Winding
Introduction to Composites Technology
Liquid Molding
Manual Composite Layup & Spray Up
Powder Metallurgy
Pultrusion

ENGINEERING/MANAGEMENT

ABC/ABM Understanding Manufacturing Costs
Benchmarking Manufacturing Processes — Program Reference Guide
Concept Modeling
Concurrent Engineering Design
Continuous Improvement-Sustaining the Effort
Controlling Design Variants
Design for Manufacture and Assembly
DFM: Design for Manufacturing (case studies)
Direct Metal Manufacturing
Ergonomic Safety (case studies)
Ergonomics in Manufacturing
Factory Man: How Jim Harbour discovered Toyota’s quality and productivity methods and helped the U.S. auto industry get competitive
Failure Mode Effects Analysis
From Concept to Customer: Portfolio, Pipeline, and Strategic Project Management
Gaging & Inspection Tool Design
Inspection and Measurement in Manufacturing
Kaizen Event Fieldbook
Kanban Systems
Lean 9001: Battle for the Arctic Rose
Lean Manufacturing for the Small Shop, 2nd Edition
Lean Manufacturing Systems and Cell Design
Lean Manufacturing: A Plant Floor Guide
Lean Tooling
Machine Vision & Error Proofing
Making Manufacturing Cells Work

FEATURE KEY

eBOOK
VIDEO ON-DEMAND
Managing Teams in Manufacturing
Manufacturing Plant Layout
Measurement & Gaging
Mechanical & Non-Destructive Testing
Medical Applications of Rapid Prototyping
Passion for Manufacturing
Precision Machine Design
Rapid Castings: Rapid Prototypes for Metal Casting Processes
Rapid Injection Mold Tooling
Rapid Manufacturing
Rapid Prototyping
Rapid Prototyping & Manufacturing
Rapid Tooling, Rapid Parts
Re-Engineering the Manufacturing Enterprise
Reverse Engineering: 3D Data Capture
RFID: Tool Tracking Solutions
Six Sigma and Other Continuous Improvement Tools for the Small Shop
Stereolithography and Other RP&M Technologies
Story of a Lean Journey
Strategic Project Management
Success Factors for Implementing Change: A Manufacturing Viewpoint
The Hitchhiker’s Guide to Lean
The Human Side of Lean Manufacturing at TECHNICOLOR
The Lean Company: Making the Right Choices
The Power of Small Ideas
The Squeeze: A Novel Approach to Business Sustainability
Theory of Constraints
Training Within Industry
User’s Guide to Rapid Prototyping
Walking the Talk: Moving into Leadership

What About Rewards for the Ideas?
What is an Idea?

FOUNDATIONAL
A Lean Supply Chain at John Deere
A Primer on the Taguchi Method, 2nd Edition
Autonomous Activities - TPM in America Video 5
Benchmarking Manufacturing Processes: Introspection; Reaching Outward (two-part video series)
Breakthrough Kaizen Events
Building a Lean Culture
C-17 Quality
C-17 Production Operations and Lean Manufacturing
Continuous Quality Improvement
Customer Focused Manufacturing
Employee Involvement: A Key Strategy to Running a Healthy Business
Engineering a Lean Supply Chain
Five S Factory Makeover
Flexible Material Handling
Flexible Small Lot Production for JIT
Focusing Ideas on What Matters Most
Fundamentals of Composites Manufacturing, 2nd Edition + Instructor’s Guide
Fundamentals of Manufacturing, 3rd & 2nd Edition
Fundamentals of Manufacturing Solutions Manual
Fundamentals of Manufacturing Supplement (to the 2nd edition)
Fundamentals of Manufacturing Workbook
Getting More and Better Ideas
Green Lean: Achieving Outstanding Environmental Performance with Lean
Incorporating Lean: From the Factory to Front Office
FOUNDATIONAL (cont.)

Introduction to Lean Manufacturing
Introduction to Lean Tooling
Lean Accounting
Lean Automation
Lean Culture
Lean ITS
Lean Manufacturing at Miller SQA
Lean Manufacturing at TAC Manufacturing
Lean Manufacturing in a Small Shop
Lean Product Design
Lean Six Sigma, the Power to Drive Rapid and Sustained Value Creation
Lean Tooling in Action
Leaning the Supply Chain
Learning Lean Through Simulation
Lessons from the Field: Making Lean Finally Work
Liberating and Transforming: Employee Ideas and Lean Culture
Making Ideas a Central Part of Work
Mapping Your Value Stream
Metal Forming Simulation
Minimum Quantity Lubrication
Mistake Proofing: Achieving Zero Defects
Plastic Blow Molding
Plastic Injection Molding
Plastic Injection Molding 1: Manufacturing Process Fundamentals
Plastic Injection Molding 2: Material Selection and Product Design Fundamentals
Plastic Injection Molding 3: Mold Design and Construction Fundamentals
Plastic Injection Molding 4: Manufacturing Startup and Management
Plastic Injection Molds
Plastic Thermoforming
Plastics Finishing
Poka Yoke: Mistake Proofing
Preparation & Initial Activities to Implement TPM: TPM in America Video 1
Preventive & Predictive Maintenance Tools & Techniques: TPM in America Video 3
Quick Changeover for Lean Manufacturing
Right-Sized Equipment
Setup Reduction
Single Piece Flow
Six Sigma
Six Sigma Process Improvement: Program Development in a High Speed Process Environment
Supplier Development — Boeing JDAM
Supply Chain Management
The Challenge of Staying Lean After Initial Application
The Characteristics of a Good Process
The Computerized Maintenance Management System - TPM in America Video 4
The Cost of Poor Quality
Threading
Time to Market: Reducing Product Lead Time
Tool and Die Maintenance & Troubleshooting

FEATURE KEY

- eBook
- Video on-Demand
FOUNDATIONAL (cont.)

Tool Materials
Total Productive Maintenance Blitz
TPM in America Reference Guidebook
TPM: Total Productive Maintenance
Training Operations for TPM: TPM in America Video 2
Value Stream Mapping
Visual Controls
What Lean Means
Work Measurement
Working with Acrylic
Working with Cellulosic
Working with Nylon
Working with Polyethylene
Working with Polystyrene
Working with Vinyl

MACHINING

Adaptation of the High Performance Milling Process
Advanced Grinding
Basics of Grinding
Chatter Avoidance for High Performance Machining
Chip Formation During High Speed Machining of Tempered Steel
Computer Numerical Control
Computer-Aided Tooling Design
Cutting and Grinding Fluids: Selection and Application, 2nd Edition
Cutting Tool Design
Cutting Tool Geometries
Cutting Tool Materials
Deburring and Edge Finishing Handbook
Deburring Processes
Electrical Discharge Machining
Fixture Design
Gears & Gear Manufacturing
Grinding
Grinding Technology
Hand Deburring Increasing Shop Productivity
Handbook of Jig and Fixture Design, 2nd Edition
High Speed Holemaking
High Speed Machining
High Speed Machining: A Workholding Perspective
Holemaking
Low-Cost Jigs, Fixtures and Gages for Limited Production + Instructor’s Guide
Managing Computer Numerical Control Operations
Metalcutting Fluids
MicroMachining
Milling & Machining Centers
New Developments in High Speed Machining
Parametric Programming for CNC Machines
Plastics Machining & Assembly
Thermal & Abrasive Waterjet Cutting Processes
Tooling for High Speed Machining
Turning & the Lathe
Using Computer Simulation to Understand & Optimize High Speed Machining
Workholding
MAINTENANCE
Contact Angle & Bearing Selection for High Speed, Grease Lubricated Spindles
Gear Hobbing Shaping and Shaving
Industrial Robotics

STAMPING/FORMING/FABRICATING
Casting
Die Casting
Die Design Handbook, 3rd Edition
Die Maintenance Handbook
Extrusion Processes
Forging
Fundamentals of Hydroforming
Fundamentals of Pressworking
Fundamentals of Tool Design, 6th & 5th Editions + Instructor’s Guides
Handbook of Metal Forming
Heat Treating
Hydroforming
Laser Cutting Guide for Manufacturing

Press Brake Technology
Progressive Die Design
Progressive Dies: Principles and Practices
Punch Presses
Quick Die Change, 2nd Edition
Rapid Tooling Design
Roll Forming
Sheet Metal Coil Processing
Sheet Metal Shearing & Bending
Sheet Metal Stamping Dies & Processes
Sheet Metal Stamping Presses
Thermoforming
Tool and Die Making Troubleshooter
Tube Bending
Tube Forming Processes: A Comprehensive Guide

WELDING
Advanced Robotic Welding
Welding

FEATURE KEY

© eBook
© VIDEO ON-DEMAND
why Tooling U-SME

• The leader in manufacturing training solutions
• Proven solutions for corporate, education and government organizations
• A single partner who can assemble the resources necessary to support your initiatives
• More than 80 years of experience in providing learning services, assessment programs and credential certifications
• More than 240,000 individuals and over 5,000 companies and 400 educational institutions throughout the global manufacturing community rely upon Tooling U-SME