



CLASS CATALOG

ONLINE CLASSES | INSTRUCTOR-LED TRAINING
LEARNING SERVICES | CERTIFICATIONS



WHY DO MORE THAN 50% OF FORTUNE 500® MANUFACTURING COMPANIES CHOOSE TOOLING U-SME?

Here's why: We provide competency-based learning solutions focused on your performance outcomes. This catalog provides you with a detailed list of all our course offerings – online, instructor-led training, certification programs, books, and videos. But we do so much more. We'll analyze your needs, assess your current knowledge, and develop a program that fills the gaps. Then, we'll help you launch, track, and measure the results.

We are your training partner. With credentials.

Over the last 80 years, we've worked with hundreds of thousands of individuals, over 5,000 companies, and over 550 educational institutions. Our courses are aligned to national credentials including Lean Certification, Certified Manufacturing Engineer, and Certified Manufacturing Technologist, National Institute for Metalworking Skills (NIMS), Manufacturing Skills Standards Council (MSSC), American Welding Society (AWS), and Siemens Mechatronics certifications. Our courses can also be mapped to individual or state curriculum requirements.

TOOLING U-SME'S CUSTOMIZED TRAINING MAKES IT POSSIBLE TO:

- ◆ Develop mission critical skills
- ◆ Minimize the skills gap
- ◆ Expedite onboarding and define skills development
- ◆ Capture and standardize “tribal knowledge”
- ◆ Ensure operational excellence/world class manufacturing
- ◆ Boost operational effectiveness and productivity
- ◆ Drive continuous improvement
- ◆ Improve quality and reduce scrap
- ◆ Leverage new technologies and drive innovation
- ◆ Cross train and increase workforce flexibility
- ◆ Reduce learning curve for new technologies
- ◆ Reduce risk and exposure
- ◆ Improve safety
- ◆ Drive compliance

How can we help you? Find out how we can partner with you to develop a competency-based solution to fit your training needs and your budget. Contact us at info@toolingu.com or 866.706.8665.

COMPETENCIES

NINE OUT OF TEN MANUFACTURERS ARE STRUGGLING TO FIND THE SKILLED WORKERS THEY NEED

To address this pressing challenge, Tooling U-SME brought together a cross-section of manufacturing experts to create a new industry resource: a Competency Framework for achieving manufacturing excellence.

The Competency Framework features a comprehensive series of competency models in nine manufacturing functional areas. It is made up of more than 60 job role competency models, which outline knowledge and skill objectives for production, technician, lead technician/technologist, and engineer-level job roles.

The Competency Framework offers advantages that tie directly to business goals. For example, our Competency Framework:

- ◆ Ensures enterprise-wide consistency, making a workforce more flexible and dynamic, and ultimately reducing labor costs.
- ◆ Streamlines the training process and cuts costs by eliminating unnecessary and redundant training, allowing more training where needed.
- ◆ Helps managers easily evaluate worker performance levels defined using specific behavioral indicators, which reduces subjective assessment and increases assessment accuracy.
- ◆ Enhances employee satisfaction based on the rationality of the system.
- ◆ Explains career pathways and defines what an average performer needs to become a superior performer.

Designed to complement other competency models in the industry, the Competency Framework can be used “as is” or customized to individual work practices at your facility. Another benefit is that the knowledge objectives within the framework are mapped directly to Tooling U-SME’s extensive training resources. All this helps ensure your employees have the knowledge, skills, and abilities they need to be high performers.



Created by a cross-section of manufacturing experts, Tooling U-SME’s Competency Framework is a comprehensive series of competency models in nine manufacturing functional areas.

TABLE OF CONTENTS

FUNCTIONAL AREA	HIGHLIGHTS	PAGE
Foundational		
Safety	Intro to OSHA, fire safety and prevention, personal protective equipment, lockout/tagout procedures	5
Applied Mathematics	Fundamentals, fractions and decimals, units of measurements, basics of tolerance, blueprint reading	5
Materials	Intro to materials, structure of metals, overview of plastic materials, mechanical properties of metals	5
Inspection	Basic measurement, linear instrument characteristics, basics of the CMM, surface measurement, GD&T	6
Quality/Lean	Quality overview, ISO 9000 overview, approaches to maintenance, lean manufacturing overview	7
Machining		
Abrasives	Intro to abrasives, what is grinding?, grinding processes, grinding variables, grinding wheel materials	8
CNC	History and definition of CNC, mechanics of CNC, CNC coordinates, part program, CAD/CAM overview	8
CNC Controls: Fanuc	Control panel overview, entering offsets, locating program zero, program execution, program storage	8
CNC Controls: Haas	Control panel overview, entering offsets, locating program zero, program execution, program storage	8
CNC Controls: Mazak	Control panel overview, entering offsets, locating program zero, program execution, program storage	8
Manual Machining	Basics of the manual mill, basics of the engine lathe, manual mill operation, holmaking on the mill	9
Metal Cutting	Metal removal processes, safety for metal cutting, what is cutting?, machines for metal cutting	9
Workholding	Intro to workholding, locating devices, clamping basics, fixture body construction, drill bushing selection	9
Maintenance		
Electrical Systems	Electrical units, safety for electric work, intro to circuits, intro to magnetism, DC circuit components	10
Hydraulics & Pneumatics	Intro to fluid systems, the forces of fluid power, intro to fluid conductors, fittings for fluid systems	10
Mechanical Systems	Intro to mechanical systems, safety of mechanical work, forces of machines, lubricant fundamentals	10
Rigging	Intro to machine rigging, rigging equipment, lifting and moving equipment, rigging mechanics	10
Motor Controls	Intro to electric motors, logic and line diagrams, DC motor applications, solenoids, AC motor applications	10
PLCs: Allen Bradley/Rockwell	Intro to PLCs, basics of ladder logic, numbering systems and codes, basic programming	11
PLCs : Siemens	Numbers, codes and data types for Siemens PLCs, Siemens PLC communication, Siemens SIMATIC modular PLCs, Siemens PLC Programming Concepts	11

FUNCTIONAL AREA	HIGHLIGHTS	PAGE
Maintenance (continued)		
Robotics	Intro to robotics, robot safety, robot components, end effectors, robot axes, robot sensors	11
Welding		
Welding	Oxyfuel, SMAW, GMAW, FCAW, Plasma, welding safety, weld types, weld inspection, submerged arc welding	12
Additive Manufacturing		
Additive Manufacturing	Intro to additive manufacturing, additive manufacturing safety, additive manufacturing methods and materials	13
Stamping/Forming/Fabricating		
Stamping	Press basics, stamping safety, punch and die operations, die components, die cutting variables	13
Press Brake	Press brake safety, press brake components, bending fundamentals, die bending operations	13
Composites Processing		
Composites	Intro to composites, safety for composites processing, overview of composite processes, materials for composites	14
Assembly/Final Stage Processes		
Adhesives	Intro to adhesive bonding, basics of the bonding process, types of adhesives, surface preparation	14
Coatings	Intro to coating composition, surface preparation, processes for applying coatings, coating defects	14
Fasteners	Intro to assembly, safety for assembly, overview of threaded fasteners, torque fastener ergonomics	14
Soldering	What is soldering?, safety for soldering, soldering equipment, soldering applications	14
Design & Engineering		
Design & Engineering	Concurrent engineering, DFM/DFA, precision machine design	15
Leadership		
Leadership	Essentials of leadership, global supply chain management, strategic project management, managing performance	15
Knowledge Edge®	Online collection of technical papers, videos, and books	16
Learning Services	Workforce performance assessments, custom program design, consulting	17
Customization	Custom online courses, videos, white papers, instructor-led classes	18
Certifications	Lean Bronze/Silver/Gold and CMfgT/CMfgE	19
Assessments	Establish baseline knowledge, identify skills gaps	20
Notes	Plan the future of your training and development program	21-22

FOUNDATIONAL

Safety

- Introduction to OSHA 101 ■
- Ergonomics 102 ■
- Personal Protective Equipment 111 ■
- Noise Reduction and Hearing Conservation 121 ■
- Respiratory Safety 131 ■
- Lockout/Tagout Procedures 141 ■
- Machine Guarding 140
- SDS and Hazard Communication 151 ■
- Bloodborne Pathogens 161 ■
- Walking and Working Surfaces 171 ■
- Fire Safety and Prevention 181 ■
- Flammable/Combustible Liquids 191 ■
- Hand and Power Tool Safety 201 ■
- Safety for Lifting Devices 211 ■
- Powered Industrial Truck Safety 221 ■
- Confined Spaces 231 ■
- Environmental Safety Hazards 241 ■

Applied Mathematics (formerly Shop Essentials)

- Math Fundamentals 101 ■
- Math: Fractions and Decimals 111 ■
- Applied and Engineering Sciences 110
- Units of Measurement 112 ■
- Basics of Tolerance 121 ■
- Manufacturing Process Applications: Part I 124
- Manufacturing Process Applications: Part II 125
- Blueprint Reading 131 ■
- Algebra Fundamentals 141 ■
- Geometry: Lines and Angles 151 ■
- Geometry: Triangles 161 ■
- Geometry: Circles and Polygons 171 ■
- Shop Geometry Overview 170 ■
- Trigonometry: The Pythagorean Theorem 201 ■
- Trigonometry: Sine, Cosine, Tangent 211 ■
- Trigonometry: Sine Bar Applications 221 ■
- Shop Trig Overview 210 ■
- Statistics 231 ■
- Interpreting Blueprints 230 ■
- Concepts of Calculus 310 ■
- Print Reading ■

Materials

- Introduction to Physical Properties 101 ■
- Introduction to Mechanical Properties 111 ■
- Introduction to Metals 121 ■
- Introduction to Plastics 131 ■
- Metal Manufacturing 140 ■
- Overview of Plastic Processes 145
- Classification of Steel 201 ■
- Essentials of Heat Treatment of Steel 211 ■
- Hardness Testing 221 ■
- Ferrous Metals 231 ■
- Nonferrous Metals 241 ■
- Thermoplastics 251 ■
- Thermosets 261 ■
- Ceramics 250
- Principles of Injection Molding 255
- Principles of Thermoforming 265
- Exotic Alloys 301 ■

■ CLASS 2.0

■ AVAILABLE IN SIMPLIFIED CHINESE

■ INSTRUCTOR-LED TRAINING

All classes available in Spanish except CLASS 2.0 courses

All classes ONLINE except where noted

Inspection

Basic Measurement 101 ▀

Calibration Fundamentals 111 ▀

Basics of Tolerance 121 ▀

Blueprint Reading 131 ▀

Hole Standards and Inspection 141 ▀

Thread Standards and Inspection 151 ▀

Surface Texture and Inspection 201 ▀

Measuring System Analysis 300

Introduction to GD&T 301 ▀

Introduction to GD&T 200 (1994)

Major Rules of GD&T 311 ▀

Interpreting GD&T 310 (1994)

Inspecting a Prismatic Part 321 ▀

Inspecting a Cylindrical Part 331 ▀

Advanced Hole Inspection 341 ▀

Inspecting with Optical Comparators 351 ▀

Inspecting with CMMs 361 ▀

Calibration and Documentation 371 ▀

In-Line Inspection Applications 381 ▀

GD&T ▾

GD&T Overview ▾

GD&T for DFM ▾



FOUNDATIONAL (Continued)

Quality/Lean

- Quality Overview 100
- Lean Manufacturing Overview 101
- ISO 9000 Review 121
- ISO 9001 2015 Review 122
- Continuous Process Improvement: Managing Flow 124
- Continuous Process Improvement: Identifying and Eliminating Waste 125
- Approaches to Maintenance 131
- Process Design and Development 133
- Product Design and Development 134
- Developing a Lean Culture 135
- Production System Design and Development 136
- Equipment/Tool Design and Development 137
- Introduction to Supply Chain Management 140
- Total Productive Maintenance 141
- 5S Overview 151
- Cell Design and Pull Systems 161
- Introduction to Six Sigma 171
- Quality and Customer Service 175
- Troubleshooting 181
- Conducting Kaizen Events 191
- Conducting an Internal Audit 201
- SPC Overview 211
- TS 16949: 2009 Overview 221
- Metrics for Lean 231
- Process Flow Charting 241
- Strategies for Setup Reduction 251
- Total Quality Management Overview 261
- Management Tools: Problem Solving 270
- Management Tools: Product and Process Design 275
- Value Stream Mapping: The Present State 301
- Value Stream Mapping: The Future State 311
- Six Sigma Goals and Tools 310
- Managing Practices for Total Quality 320
- Maintaining a Consistent Lean Culture 330
- Transforming Lean into Business Results 340
- Measuring Lean Systems 350
- Introduction to Lean: Overview of the Lean Toolbox
- Understanding the Tools and Best Practices of Lean Manufacturing
- Fundamentals: Firm Grasp on Waste and Getting 5S Right
- The Human Side of Lean
- Integrating Green Manufacturing and Lean
- Kanban: Inventory and Demand Management
- Planning Manufacturing Cells
- Role of TPM in the Lean Enterprise
- Planning and Executing Kaizen
- Kaizen Workshop
- SMED: Setup/Changeover Reduction
- Documenting and Developing Process Flow
- Value Stream Mapping: Diagram the Information and Material Flows in Your Business
- Six Sigma Green Belt
- Six Sigma Yellow Belt
- APQP/FMEA/Control Plans/Error Proofing
- Advanced Product Quality Planning (APQP)
- Design of Experiments (DOE)
- Failure Mode and Effects Analysis (FMEA) Fundamentals
- Statistical Process Control (SPC) Fundamentals
- Value Analysis and Value Engineering (VA/VE)

Sample of Knowledge Edge® content



















- What Lean Means (video)
- Kaizen Event Fieldbook (eBook)
- Mapping Your Value Stream (video)
- Strategic Project Management (eBook)
- Managing Teams in Manufacturing (video)

Assessments






















- Manufacturing Survey

MACHINING

Abrasives

- Introduction to Abrasives 100
- What Is Grinding? 110 
- Grinding Processes 201 
- Grinding Safety 211 
- Basic Grinding Theory 221 
- Dressing and Truing 230 
- Basics of the Surface Grinder 231 
- Basics of the Cylindrical Grinder 232 
- Basics of the Centerless Grinder 233 
- Setup for the Surface Grinder 241 
- Setup for the Cylindrical Grinder 242 
- Surface Grinder Operation 251 
- Cylindrical Grinder Operation 252 
- Centerless Grinder Operation 260
- Setup for Centerless Grinders 320
- Grinding Ferrous Materials 311 
- Grinding Nonferrous Materials 321 
- Grinding Wheel Materials 331 
- Grinding Wheel Geometry 361 
- Precision Grinding & Abrasive Machining
 - Certificate Program 
 - Modern Grinding Technology 

CNC

- History and Definition of CNC 100 
- Introduction to CNC Machines 201 
- Basics of the CNC Lathe 211 
- Basics of the CNC Mill 212 
- Basics of the CNC Swiss-Type Lathe 135 
- Coordinates for the CNC Lathe 221 
- Coordinates for the CNC Mill 222 
- Basics of G Code Programming 231 
- Introduction to CAD and CAM for Machining 241 
- Control Panel Functions for the CNC Lathe 251 
- Control Panel Functions for the CNC Mill 252 
- Offsets on the CNC Mill 262 
- CNC Offsets 210 
- CNC Specs for the Mill 220 
- CNC Specs for the Lathe 225 
- Creating a CNC Turning Program 301 
- Turning Calculations 285 
- Creating a CNC Milling Program 302 
- Milling Calculations 295
- Canned Cycles for the Lathe 321 
- Canned Cycles for the Mill 322 
- Computer Numerical Control (CNC) 

CNC Controls: Fanuc

- Fanuc Mill: Control Panel Overview 250
- Fanuc Lathe: Control Panel Overview 255
- Fanuc Mill: Entering Offsets 260
- Fanuc Lathe: Entering Offsets 265
- Fanuc Mill: Locating Program Zero 270
- Fanuc Lathe: Locating Program Zero 275
- Fanuc Mill: Program Execution 280
- Fanuc Lathe: Program Execution 285
- Fanuc Mill: Program Storage 310
- Fanuc Lathe: Program Storage 315
- Fanuc Mill: First Part Runs 320
- Fanuc Lathe: First Part Runs 325

CNC Controls: Haas


- Haas Mill: Control Panel Overview 250
- Haas Lathe: Control Panel Overview 255
- Haas Mill: Entering Offsets 260
- Haas Lathe: Entering Offsets 265
- Haas Mill: Locating Program Zero 270
- Haas Lathe: Locating Program Zero 275
- Haas Mill: Program Execution 280
- Haas Lathe: Program Execution 285
- Haas Mill: Program Storage 310
- Haas Lathe: Program Storage 315
- Haas Mill: First Part Runs 320
- Haas Lathe: First Part Runs 325

CNC Controls: Mazak

- Mazak Mill: Control Panel Overview 250
- Mazak Lathe: Control Panel Overview 255
- Mazak Mill: Safety for the Mill 260
- Mazak Lathe: Safety for the Lathe 265
- Mazak Mill: Locating Program Zero 270
- Mazak Lathe: Locating Program Zero 275
- Mazak Mill: Entering Offsets 280
- Mazak Lathe: Entering Offsets 285
- Creating an EIA/ISO Program for the Mazak Mill 286
- Creating an EIA/ISO Program for the Mazak Lathe 287
- Creating a Mazatrol Program for the Mill 288
- Creating a Mazatrol Program for the Lathe 289

 CLASS 2.0

 AVAILABLE IN SIMPLIFIED CHINESE

 INSTRUCTOR-LED TRAINING



All classes available in Spanish except CLASS 2.0 courses

All classes ONLINE except where noted
















MACHINING (Continued)






Mazak Mill: Program Execution 290
Mazak Lathe: Program Execution 295
Mazak Mill: Program Storage 310
Mazak Lathe: Program Storage 315
Mazak Mill: First Part Runs 320
Mazak Lathe: First Part Runs 325

Manual Machining






Basics of the Manual Mill 110
Basics of the Engine Lathe 115 
Overview of Manual Mill Setup 200
Overview of Engine Lathe Setup 205
Benchwork and Layout Operations 210
Manual Mill Operation 220
Engine Lathe Operation 225 
Holmaking on the Mill 230
Threading on the Engine Lathe 235
Taper Turning on the Engine Lathe 240

Metal Cutting

Safety for Metal Cutting 101 
Cutting Processes 111 
Overview of Machine Tools 121 
Basic Cutting Theory 201 
Introduction to Screw Machining 160
Band Saw Operation 211 
Introduction to Metal Cutting Fluids 221 
Metal Cutting Fluid Safety 231 
Toolholders for Turning 260
Speed and Feed for the Lathe 301 
Speed and Feed for the Mill 311 
Cutting Tool Materials 321 
Carbide Grade Selection 331
ANSI Insert Selections 341 
Lathe Tool Geometry 351 
Mill Tool Geometry 361 
Drill Tool Geometry 371 
Optimizing Tool Life and Process 381 

Impact of Workpiece Materials 391 
High-Speed Machining 310
Hard Turning 315
Machining Titanium Alloys 325
Introduction to EDM 100
High-Speed, High-Power Machining 
Machining Process Optimization Program 
High-Speed Endmilling for Die, Mold, Aerospace,
Racing, and Prototype Shops 
Metalworking Fluid Management
Certificate Program 

Workholding

Introduction to Workholding 104 
Supporting and Locating Principles 106 
Locating Devices 107 
Clamping Basics 108 
Chucks, Collets, and Vises 110 
Fixture Body Construction 200
Fixture Design Basics 210
Drill Bushing Selection 230


Sample of Knowledge Edge® content

High-Speed Machining (eBook)
Cutting Tool Geometries (video)
Milling and Machining Centers (video)
Parametric Programming for Computer Numerical
Control Machine Tools and Touch Probes (eBook)
Precision Machine Design (eBook)

Assessments

CNC Operator: Lathe
CNC Operator: Mill
CNC Programmer
Machinist/Machine Setter
Machinist: Tool Room
Production Grinder

 AVAILABLE IN SIMPLIFIED CHINESE

 INSTRUCTOR-LED TRAINING

All classes available in Spanish except CLASS 2.0 courses

All classes ONLINE except where noted

MAINTENANCE

Electrical Systems

- Electrical Units 101 ■
- Safety for Electric Work 111
- Introduction to Circuits 201 ■
- Introduction to Magnetism 211 ■
- DC Circuit Components 221 ■
- NEC Overview 231
- AC Fundamentals 241
- Electrical Instruments 251
- Electrical Print Reading 261 ■
- DC Power Sources 271
- AC Power Sources 281
- Conductor Selection 240
- Series Circuit Calculations 301 ■
- Parallel Circuit Calculations 311 ■
- Battery Selection 321
- Industrial Electrical Fundamentals ■
- AC Motor Controls and Relay Ladder Logic ■
- Variable Frequency Drives ■
- Troubleshooting Electrical Systems with Schematics ■

Hydraulics & Pneumatics

- Introduction to Fluid Systems 100
- Safety for Hydraulics and Pneumatics 105
- The Forces of Fluid Power 110
- Introduction to Hydraulic Components 120
- Introduction to Pneumatic Components 231 ■
- Introduction to Fluid Conductors 241 ■
- Fittings for Fluid Systems 135
- Preventive Maintenance for Fluid Systems 140
- Hydraulic Power Variables 200
- Pneumatic Power Variables 205
- Hydraulic Power Sources 210
- Pneumatic Power Sources 215
- Fluid System Print Reading 220
- Hydraulic Control Valves 230
- Pneumatic Control Valves 235
- Actuator Applications 240
- Basic Hydraulic Circuit Design 310
- Basic Pneumatic Circuit Design 315
- Hydraulic Fluid Selection 320
- Contamination and Filter Selection 330
- Hydraulic Principles and System Design 340
- Level 1 Industrial Hydraulics ■
- Hydraulic Connectors and Conductors ■
- Level 2 Industrial Hydraulics ■
- Hydraulic Troubleshooting Using Schematics ■
- Level 1 Pneumatics ■

Mechanical Systems

- Introduction to Mechanical Systems 100
- Safety for Mechanical Work 111 ■
- Forces of Machines 110
- Power Transmission Components 120
- Lubricant Fundamentals 130
- Mechanical Power Variables 200
- Bearing Applications 221 ■
- Spring Applications 220
- Belt Drive Applications 221
- Gear Geometry 240
- Gear Applications 245
- Clutch and Brake Applications 250
- Mechanical Fundamentals ■
- Introduction to Lubrication ■

Rigging

- Introduction to Machine Rigging 110
- Rigging Equipment 120
- Lifting and Moving Equipment 130
- Rigging Inspection and Safety 210
- Rigging Mechanics 220

Motor Controls

- Introduction to Electric Motors 301 ■
- Symbols and Diagrams for Motors 210
- Logic and Line Diagrams 220
- DC Motor Applications 230
- Solenoids 235
- AC Motor Applications 240
- Relays, Contractors, and Motor Starters 201 ■
- Control Devices 260
- Reversing Motor Circuits 310
- Distribution Systems 320
- Specs for Servomotors 330
- Timers and Counters 340
- Electronic Semiconductor Devices 350
- Photonic Semiconductor Devices 355
- Limit Switches and Proximity Sensors 360
- Photoelectric and Ultrasonic Devices 365
- Reduced Voltage Starting 370
- Solid-State Relays and Starters 375
- Deceleration Methods 380
- Acceleration Methods 385

MAINTENANCE (Continued)

PLCs: Allen Bradley/Rockwell

Introduction to PLCs 200
Hardware for PLCs 210
Basics of Ladder Logic 220
Numbering Systems and Codes 230
PLC Inputs and Outputs 240
Basic Programming 250
PLC Timers and Counters 260
Networking for PLCs 270
Hand-Held Programmers of PLCs 280
PLC Diagrams and Programs 300
Overview of PLC Registers 305
PLC Program Control Instructions 310
Math for PLCs 320
Sequencer Instructions for PLCs 330
PLC Installation Practices 340
PID for PLCs 350
Data Manipulation 360
Shift Registers 370
Level 1 PLC Fundamentals ▀

PLCs: Siemens

Basics of Siemens PLCs 200
Siemens PLC Hardware 210
Numbers, Codes, and Data Types for
Siemens PLCs 220
Siemens PLC Communication 230
Siemens PLC Inputs and Outputs 240
Siemens Human Machine Interfaces 250
Siemens SIMATIC Modular PLCs 260
Siemens PLC Programming Concepts 270
Basic Ladder Diagram Programming for
Siemens PLCs 280
Basic Function Block Diagram Programming
for Siemens PLCs 290
Ladder Diagram Timers and Counters for
Siemens PLCs 300
Function Block Diagram Timers and Counters
for Siemens PLCs 310
Additional Ladder Diagram Instructions for
Siemens PLCs 320

Additional Function Block Diagram Instructions
for Siemens PLCs 330
Siemens SIMATIC S7-1200 PLCs 340
Siemens SIMATIC S7-1500 PLCs 350
Siemens Safety Integrated for
Factory Automation 360

Robotics

Introduction to Robotics 110
Robot Safety 211 ▀
Robot Components 120
End Effectors 125
Applications for Robots 130
Automated Systems and Control 135
Robot Axes 140
Robot Sensors 150
Robot Troubleshooting 160
Robot Maintenance 170
Concepts of Robot Programming 210
Robotic Drives, Hardware, and Components 220
Robot Installations 230
Robotic Control Systems 240
Vision Systems 250
Industrial Network Integration 260

Sample of Knowledge Edge® content

Die Maintenance Handbook (eBook)
TPM: Total Productive Maintenance
Industrial Robotics (video)
Autonomous Activities (video)
Die Maintenance Handbook (eBook)

Assessments

Electrician: Industrial
Inspector: Mechanical
Maintenance and Repair: General
Maintenance and Repair: Industrial Machinery

WELDING

Welding

- What Is Oxyfuel Welding? 100
- Oxyfuel Welding Safety 105
- Welding Safety Essentials 101 
- PPE for Welding 111 
- Welding Fumes and Gases Safety 121 
- Electrical Safety for Welding 131 
- Introduction to Welding 141 
- What Is Arc Welding? 110
- Introduction to Welding Processes 151 
- Arc Welding Processes 120 
- Math Fundamentals for Welding 161 
- Geometry Fundamentals for Welding 171 
- Material Tests for Welding 201 
- Welding Ferrous Metals 211 
- Welding Nonferrous Metals 212 
- Overview of Weld Types 221 
- Overview of Weld Defects 222 
- Arc Welding Symbols and Codes 231 
- Fabrication Process 232 
- Electrical Power for Arc Welding 241 
- Introduction to GMAW 251 
- Introduction to SMAW 252 
- Introduction to FCAW 261 
- Introduction to GTAW 262 
- Introduction to Submerged Arc Welding 160
- Arc Welding Power Sources 260
- Electrode Selection 270
- Overview of Soldering 271 
- Thermal Cutting Overview 281 
- Oxyfuel Cutting Applications 282 
- Plasma Cutting 283 
- Introduction to Automation 291 
- GMAW Applications 301 
- Advanced GMAW Applications 302 
- SMAW Applications 311 
- FCAW Applications 321 
- GTAW Applications 331 
- Oxyfuel Welding Applications 207
- SAW Applications 255
- Arc Welding Aluminum Alloys 310

Sample of Knowledge Edge® content

- Chapter 13: Welding Process (eChapter)
- Advanced Robotic Welding
- Chapter 26: Welding/Joining (eChapter)
- Chapter 10: Estimating Welding Costs (eChapter)
- Welding Introduction

Assessments

- Arc Welder

AVAILABLE IN SIMPLIFIED CHINESE

All classes available in Spanish except CLASS 2.0 courses
All classes ONLINE except where noted



ADDITIVE MANUFACTURING

Additive Manufacturing

Introduction to Additive Manufacturing 110
Additive Manufacturing Safety 120
The Basic Additive Manufacturing Process 130
Additive Manufacturing Methods and Materials 140
Design for Additive Manufacturing 201 ■
Additive Manufacturing Materials Science 211 ■
Integrating Additive Manufacturing
with Traditional Manufacturing 221 ■
Additive Manufacturing as a Secondary Process 231 ■
Additive Manufacturing Overview ■

Sample of Knowledge Edge® content

Advanced Additive Manufacturing Materials (tech paper)
Metal Powders for Additive Manufacturing
Rapid Prototyping (video)
Medical Applications of Rapid Prototyping (video)
Advances and New Technologies in Additive
Manufacturing of metals (tech paper)

STAMPING/FORMING/FABRICATING

Stamping

Press Basics 110
Stamping Safety 115
Punch and Die Operations 120
Die Components 130
Coil Handling Equipment 140
Die Cutting Variables 200
Monitoring Press Operations 220
Guiding System Components 230
Stripper System Components 235
Coil Loading Procedures 250
Die Setting Procedures 300
Coil Slitting Fundamentals ■
Coil Slitting & Leveling Certificate Program ■
Laser Cutting Certificate Program ■
Metal Formability Certificate Program ■
Metal Stamping Press Maintenance
Certificate Program ■
Stamping Die Certificate Program ■

Press Brake

Press Brake Safety 100
Press Brake Components 110
Bending Fundamentals 120

Die Bending Operations 130
Operating the Press Brake 200
Press Brake Specifications 220

Sample of Knowledge Edge® content

Press Brake Technology (eBook)
Punch Presses (video)
Quick Die Change (eBook)
Laser Cutting Guide for Manufacturing (eBook)
New Technologies in Forming and Fabricating
(tech paper)

Assessments

Press Brake Operator
Press Operator

■ INSTRUCTOR-LED TRAINING

All classes available in Spanish except CLASS 2.0 courses
All classes ONLINE except where noted

COMPOSITES PROCESSING

Composites

Introduction to Composites 110
Safety for Composite Processing 115
Overview of Composite Processes 120
Traditional Composites 125
Advanced Thermoset Resins for Composites 130
Advanced Materials for Composites 135
Introduction to Lay-up and Spray-up Molding 140
Introduction to Compression Molding 170
Surface Finishing Composites 190
Vacuum Bagging Technique:
 Single-Sided Bagging 230
Composite Inspection and Defect Prevention 240
Repair Methods for Composites 250

Introduction to Composites ▾
Joining and Bonding Composite Structures ▾
Metallurgy Certificate Program ▾
Repair of Advanced Composite Structures ▾
Tooling for Composites ▾

Sample of Knowledge Edge® content

Introduction to Composites Technology (eBook)
Automated Composite Layup and Spray Up (video)
Filament Winding (video)
Successful Composites Technology Transfer: Applying
 NASA Innovations to Industry (eBook)
Composites Post Fabrication and Joining (video)

ASSEMBLY/FINAL STAGE PROCESSES

Adhesives

Introduction to Adhesive Bonding 110
Basics of the Bonding Process 120
Introduction to Adhesive Properties 130
Types of Adhesives 140
Surface Preparation 210
Steps for Adhesive Application 220

Coatings

Introduction to Coating Composition 110
Surface Preparation for Coatings 120
Processes for Applying Coatings 140
Coating Defects 150
Troubleshooting Coating Defects 170

Fasteners

Introduction to Assembly 100
Safety for Assembly 105
Introduction to Fastener Threads 110
Overview of Threaded Fasteners 117
Tools for Threaded Fasteners 120
Overview of Non-Threaded Fasteners 125
Introduction to Fastener Ergonomics 130
Properties for Fasteners 200
Understanding Torque 210
Threaded Fastener Selection 215

Soldering

What is Soldering? 110
Safety for Soldering 115
Soldering Equipment 130
Soldering Applications 200
Solder and Flux Selection 210
Soldering PCBs 220
Lead-Free Soldering 230

Sample of Knowledge Edge® content

Successful Assembly Automation (eBook)
Plastics Machining and Assembly (video)
Fastening and Assembly (video)
Brazing and Soldering (video)
Design for Manufacture and Assembly
 (DFMA) (video)

Assessments

Assembler Program
Assembler: Electrical

DESIGN & ENGINEERING

Design & Engineering

Concurrent Engineering ▾
Design for Manufacturability and Assembly (DFM/DFA) ▾
GD&T for DFM ▾
Measurement Inspection and Gaging Level 1 ▾
Measurement Inspection and Gaging Level 2 ▾
Precision Machine Design ▾
Practical Applications of Machine Tool Metrology ▾
Lean Product Development ▾
Tolerance Stack-Up Analysis ▾

Sample of Knowledge Edge® content

Lean Product Development (video)
Measurement and Gaging (video)
Gaging and Inspection Tool Design (video)
Design for Manufacture and Assembly (DFMA) (video)
DFM: Design for Manufacturing (video)

Assessments

Production/Manufacturing Engineer
Sales Engineer

LEADERSHIP

Leadership

Essentials of Leadership 110
Essentials of Communication 120
Managing Performance: Best Practices 130
Managing Performance: Corrective Actions 135
Basics of Manufacturing Costs 140
Introduction to Managerial Accounting 145
Conflict Resolution Principles 150
Conflict Resolution for Different Groups 155
Team Leadership 160
Manufacturing Management 180
Personal Effectiveness 190
Managing the Diverse Workplace 210
Harassment and Discrimination 215
Performance Management and the Law 230
Computerized Maintenance Management System (CMMS) Certificate Program ▾
Cycle Time Management/Reengineering ▾
Global Supply Chain Management ▾
How to Coach Your People to Think Independently ▾
Industrial Engineering Fundamentals ▾
Manufacturing Technology Fundamentals ▾
Strategic Project Management ▾
Project Risk Management ▾
Rapid and Accurate Cost Estimating and Quoting ▾
Walking the Talk Certificate Series ▾

Sample of Knowledge Edge® content

Strategic Project Management (eBook)
Realistic Cost Estimating for Manufacturing, Third Edition (eBook)
Walking the Talk: Moving into Leadership (eBook)
Managing Teams in Manufacturing (eBook)
From Concept to Customer: Portfolio, Pipeline, and Strategic Project Management (eBook)

Assessments

Industrial Sales
Quality/Lean Manager

▾ INSTRUCTOR-LED TRAINING

All classes available in Spanish except CLASS 2.0 courses
All classes ONLINE except where noted

KNOWLEDGE EDGE®

THE EXACT INFORMATION YOU NEED, EXACTLY WHEN YOU NEED IT.

Knowledge Edge® is an online service that provides comprehensive, validated manufacturing content in multi-media formats and includes over:

- ◆ 1,200 eBooks and chapters
- ◆ 700 training videos and clips
- ◆ 16,000 technical papers

With Knowledge Edge, the best manufacturing content is at your fingertips 24/7. Playlists allow you to compile and build unique reference and learning resources for individuals and groups of learners when and where you need it to maximize the power of your training. Content that is typically used for informal learning is now in your hands as part of your formal learning program.



LEARNING SERVICES

WORK WITH EXPERT ADVISORS

Many organizations seeking an advanced-level partnership engage with us for learning and development programs or projects.

Tooling U-SME has expertise in organizational development, instructional design, and manufacturing training program management. We work on-site with a company's human resources, management, and front-line team members in a variety of capacities.

WORKFORCE PERFORMANCE ASSESSMENT

Gauge the organization's status and ability to meet the challenges of maintaining a skilled workforce.

DESIGN AND BUILD COMPETENCIES

Systematically define training development competencies, knowledge, and skills to precisely align programs for performance results.

CUSTOM CONTENT DESIGN

Develop and create proprietary content for your organization, including online classes, OJT, instructor-led training, and work instructions.

STANDARDIZING OJT PROGRAMS

Boost training effectiveness by enhancing the internal training team's skills and knowledge.

JOB QUALIFICATION STANDARDS

Establish requirements necessary to assure work is performed accurately and safely.

CONSULTING

Seasoned experts are ready to take on the most challenging issues and/or single projects.



CUSTOMIZATION

FORWARD-THINKING ORGANIZATIONS INVEST IN CUSTOM PROGRAMS

This enables a company to precisely and effectively address their proprietary needs, as well as reflect their corporate culture.

Tooling U-SME Learning Services brings a seasoned team of manufacturing, organizational development, and educational design experts to custom program challenges. An immersive, comprehensive approach assures training programs that directly link goals to results. Learning Services will:

- ◆ Perform job analysis
- ◆ Work with the company's subject matter experts
- ◆ Establish performance goals
- ◆ Codify competencies
- ◆ Align learning plans
- ◆ Measure impact

Drawing on decades of experience in manufacturing, we can help create every element of a training program – from online courses to videos, and white papers to instructor-led classes. Tooling U-SME has:

- ◆ A team of educational specialists to develop curriculum
- ◆ A library of 20,000 training modules, videos, online lessons, and other resources, ready to be used or customized
- ◆ Connections with community colleges for training partnerships

Tooling U-SME offers a range of content customization services that can seamlessly integrate your content into a strategic training plan to make sure your people learn what they need for your organization.

UPLOAD SERVICES FOR PRE-DEVELOPED CONTENT

Use our format guide and templates to convert and upload your pre-existing content for web-based delivery. Your online content fits seamlessly into our system.

COMPLETE CONTENT SERVICES FROM OUR DESIGN STAFF

Gain access to our own content development resources to transform your expertise into web-based training of the highest quality. Deliver your training to your people, anywhere in the world.



CERTIFICATIONS

KNOWLEDGE EARNED. AND VALIDATED.

Tooling U-SME offers outcome assessments, certifications, and certificate programs that allow you to benchmark your employees' knowledge against an industry-recognized standard. Programs are developed with experienced industry professionals to test the effectiveness and provide the validation you need.

REVIEW PROGRAMS

Our online review programs provide a comprehensive review of key concepts for the Certified Manufacturing Technologist (CMfgT) and the Lean Bronze Certifications. Each one provides vocabulary and definitions, interactive exercises, pre- and post-course tests, and a downloadable PDF of each course.



CERTIFICATIONS

Lean Certification

This industry-leading program provides individuals, companies, and educators with a comprehensive and effective roadmap for professional and workforce development that aligns with industry-recognized standards. The program is the result of a partnership among four leading non-profit organizations — the American Society for Quality (ASQ), the Association for Manufacturing Excellence (AME), the Shingo Institute, and SME — that work together as the Lean Certification Alliance to set the standard for operational excellence and workforce improvement. Lean Certification not only helps individuals attain the knowledge, it validates it. Find out more at sme.org/leancert.

Lean Certification is pursued at the level most appropriate to your participants' career, knowledge, and experience.

- ◆ Lean Bronze Certification focuses on the fundamentals of lean from a tactical perspective.
- ◆ Lean Silver Certification integrates lean knowledge with leadership experience.
- ◆ Lean Gold Certification focuses on the strategic transformation of an entire enterprise.

Certified Manufacturing Technologist (CMfgT)

The CMfgT is an entry-level certification that 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. Learn more at sme.org/CMfgT.

Certified Manufacturing Engineer (CMfgE)

Professionals seeking a CMfgE Certification have advanced manufacturing engineering experience, with a minimum of eight years of combined manufacturing-related education and/or work experience, including a minimum of four years of work experience. A professional seeking a CMfgT can qualify with a minimum of seven years of combined manufacturing-related work experience or education. Details available at sme.org/CMfgE.

ASSESSMENTS

CLOSE THE SKILLS GAP TO STAY COMPETITIVE

Effective assessment of knowledge is a critical first step in your overall training plan.

At Tooling U-SME, we know exactly what you need. Our assessments allow you to align competencies, curriculum, and the needs of individual workers so they can study their specific courses in a self-paced learning environment. Assessment questions are derived from our extensive course libraries, which are fully mapped to our industry-proven curriculum.

Effective training establishes a baseline of knowledge for each person, compares that baseline to the knowledge and skill requirements of a role, and then applies the exact amount of training to close the gap, ensuring that the knowledge and skills have been retained and applied on the job. The bottom line is that effective assessment of knowledge is a critical step in your overall training plan.

Assess manufacturing technology, engineering, lean processes and practices, machining, welding, fabrication, maintenance, assembly, foundational skills, and much more using Tooling U-SME's 30+ pre-developed assessments, or we'll work with you to develop assessments based on your specific needs.



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
- ◆ Hundreds of thousands of individuals, and over 5,000 companies and 550 educational institutions throughout the global manufacturing community rely upon Tooling U-SME

