

# CNC MACHINIST

O\*NET OCCUPATIONAL CODE: 51-4041.00

## Related Training Instruction Framework for Common Job Functions

The Apprenticeship Framework from Tooling-U SME provides the industry-endorsed related training instruction (RTI) hours needed to meet the requirements of a competency-based or hybrid apprenticeship program. The Apprenticeship Framework is designed to provide a minimum of 165 RTI hours per framework and can be used to enhance an existing program or provide the building blocks for new programs. Frameworks are divided into five sections that support any 21st-century apprenticeship, and provide and encourage new approaches to building a skilled and competitive workforce.

## Flexible and Convenient

The Apprenticeship Framework quickly provides an RTI resource for any apprenticeship. Online classes provide students with self-paced, easy access to RTI that is available 24x7. An app is available for phones and tablets.

## THE APPRENTICESHIP FRAMEWORK OFFERS:

- Predefined curriculum for each job function
- Online classes that align to classroom objectives and add program capacity
- A minimum of 165 RTI hours per framework
- Supplemental videos
- Access to the Administrative and Student Center
- Guidance from our Client Success team
- Hundreds of additional instructor-led training (ILT) hours

## FRAMEWORK SECTIONS

### Job Skills

Adherence to core fundamental employability skills that employers desire from new and incumbent employees in the workplace.

### Health and Safety

Adherence to safety, health and environmental rules and regulations to avoid workplace injury, and to maximize personal and organizational productivity and profitability.

### Foundations in Manufacturing

Adherence to the essential technical knowledge and skills necessary to build a job-ready manufacturing workforce.

### Technical Expertise

Adherence to the standards designated for a specific craft through the achievement of theory and hands-on skills, where these elements are applied in industry work.

### Leading and Developing People

Adherence to good practices and positive interaction in leading, training or mentoring co-workers within a manufacturing environment.

## Job Skills

Tooling U-SME Department	Related Training Instruction Topics Covered	RTI Hours
Lean	5S	1.5
Supervisor Essentials	Manufacturing Costs, Active Listening, Teamwork, Communication, Respect for Others, Decision Making, Reading Comprehension, Business Writing, Computer Basics, Customer Focus, Problem Solving	16.5
<b>Total</b>		<b>18</b>

## Health and Safety

Tooling U-SME Department	Related Training Instruction Topics Covered	RTI Hours
Safety	Bloodborne Pathogen Exposure, Confined Spaces, Pedestrian Safety, Industrial Ergonomics, Fire Safety and Evacuation Plans, Handling Storage, Power and Hand Tool Safety, OSHA Guidance, LOTO Roles and Responsibilities, LOTO Process and Procedures, Machine Guarding, Metalworking Fluid Safety, Hearing Conservation, Personal Grooming, Personal Protective Equipment (PPE), Respiratory Protection, Electrical Safety, Safety Responsibilities, Hazard Communications, Fall Protection, Walking and Working Surfaces	34.5
<b>Total Hours</b>		<b>34.5</b>

## Foundations in Manufacturing

Tooling U-SME Department	Related Training Instruction Topics Covered	RTI Hours
Lean	Continuous Improvement Practices, Total Productive Maintenance (TPM), Material Resource Planning (MRP)	6
Workholding	Locating Machine Points	1.5
Inspection	Surface Measurement, Gauges/Variable Inspection Tools	6
Shop Essentials (Applied Mathematics)	Trigonometry	6
CNC	Calculating Part Features	3
<b>Total</b>		<b>22.5</b>

## Technical Expertise

Tooling U-SME Department	Related Training Instruction Topics Covered	RTI Hours
Abrasives	Quality Checks – Grinding, Preparing a Grinding Wheel, Common Problems – Grinding, Sharpening a Drill Bit, Safe Work Practices – Grinding, Grinding Wheel Selection, Cutting Fluids, Coolants – Grinding, Surface Grinder Operation	16.5
CNC	Create/Edit CNC Programs, Controls – Turning, Standard Workholding and Accessories – Turning, Controls – Milling, Create/Edit CNC Programs, Load Programs/Make Tool Offsets – CNC, CNC Machine Control Systems, Absolute and Incremental Coordinate Systems, CNC Applications, Lathe Calculations	22.5
CNC Controls: Fanuc	CNC Machine Control Systems, Load Programs/Make Tool Offsets – CNC, Create/Edit CNC Programs, CNC Machine Control Systems	15
CNC Controls: Haas	CNC Machine Control Systems, Load Programs/Make Tool Offsets – CNC, Create/Edit CNC Programs, CNC Machine Control Systems	15
CNC Controls: Mazak	CNC Machine Control Systems, Load Programs/Make Tool Offsets – CNC, Create/Edit CNC Programs, CNC Machine Control Systems	21
Manual Machining	Standard Operations – Milling, Face and Center Drill Processes – Turning, Hand Files, Operating Principles – Turning, Boring a Hole – Milling, Vertical Mill Operating Principles, Quality Checks – Turning, Quality Checks – Milling, Taper Cutting/Calculations, Taper Attachments, Thread Fit Classifications	19.5
Metal Cutting	Insert Material and Geometry, Safe Work Practices – Sawing, Carbide Cutting Tools, Drilling Operations, HSS Cutting Tools, Standard Drilling Tools, Cutting Fluids, Coolants – Drilling, Standard Tools & Toolholders – Turning, Standard Cutting Tools – Milling, Types of Drill Presses, Safe Work Practices – CNC, Speeds, Feeds and Depths of Cut	21

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## Technical Expertise

Tooling U-SME Department	Related Training Instruction Topics Covered	RTI Hours
Workholding	Bench Workholding, Arbor and Shop Presses	10.5
Safety, Stamping, Materials	Arbor and Shop Presses, Machinability and Chip Formation, Quality Checks – Drilling	4.5
<b>Total</b>		<b>145.5</b>

## Job Skills

Tooling U-SME Department	Related Training Instruction Topics Covered	RTI Hours
Supervisor Essentials	Team Building	1.5
<b>Total</b>		<b>1.5</b>