

WELDER

O*NET OCCUPATIONAL CODE: 51-4122.00

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
Quality	5S	1.5
Shop Essentials (Applied Mathematics)	Manufacturing Awareness	3
Supervisor Essentials	Active Listening, Communications, Respect for Others, Harassment and Prevention, Industrial and Labor Relations, Reading Comprehension, Customer Focus	9
Total		13.5

Health and Safety

Tooling U-SME Department	Related Training Instruction Topics Covered	RTI Hours
Safety	General Workplace Safety, Personal Protective Equipment, Fall Protection, Confined Spaces, Machine Safety, Fire Safety and Prevention, Back Injury Prevention, Respiratory Protection, Industrial Ergonomics, LOTO, Hazard Communication Training, Hazardous Materials Handling and Storage, Bloodborne Pathogens, Pedestrian Safety	27
Metal Cutting	Machine Safety, Metalworking Fluid Safety	1.5
Total Hours		28.5

Foundations in Manufacturing

Tooling U-SME Department	Related Training Instruction Topics Covered	RTI Hours
Shop Essentials (Applied Mathematics)	Basic Arithmetic Operations, Using Fractions, Decimals and Percentages, Units of Measurement, Geometry, Trigonometry, Statistical Process Control (SPC), Reading Schematics	15
Inspection	Fundamentals of Blueprint Reading, GD&T, Inspection, Reading Schematics	10.5
Lean	Continuous Improvement, System Critical Thinking, Lean Manufacturing, Statistical Process Control (SPC), Root Cause Analysis	18
Mechanical Systems	Mechanical Physics	1.5
Quality	Quality Management System (QMS), Standard Operating Procedures	3
Rigging	Rigging Safety, Tools and Techniques	6
Robotics	Machines, Start Up and Shut Down	3
Total		57

Technical Expertise

Tooling U-SME Department	Related Training Instruction Topics Covered	RTI Hours
Welding	Equipment Requirements and Setup TIG, Construction/Characteristics of Electrodes, Procedure Variables for MIG Welding, Power Sources and Equipment for SMAW, Power Sources and Equipment for TIG Welding, Power Sources and Equipment for MIG Welding, Safety Concerns Applicable to Oxyfuel Cutting, Safety Concerns Applicable to Plasma Arc Cutting, Safety Concerns Applicable to SMAW, TIG and MIG, Heat Treatment of Steel, Metals and Their Properties, Hand Tools (Manual and Power) Safety and Operations, Fundamentals of SMAW, TIG and MIG, Mechanical Test Methods, Fundamentals of Brazing/Soldering, Fundamental Cause of Distortion, Types and Causes of Structural Soundness Discontinuities, Correction of Defective Weld Quality, Fundamental Joint Types and Positions, Fundamentals of Oxyfuel Cutting, Fundamentals of Plasma Arc Cutting, Application of Welding Symbols, Welding Codes and Standards, Safety Concerns, Factors of Weldability of Metals	73.5
Abrasives	Pedestal Grinder Safety and Operations	4.5
Fasteners	Hand Tools (Manual and Power) Safety and Operations	3
Inspection	In-Process Weld Monitoring	1.5
Materials	Steel Types and Classification Systems, Metals and Their Properties, Microstructures of Common Metals, Processes to Produce Metals and Alloys	9

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Technical Expertise

Tooling U-SME Department	Related Training Instruction Topics Covered	RTI Hours
Metal Cutting	Band Saw Safety and Operations	1.5
Press Brake	Brake Press Safety and Operations	9
Safety	Hand Tools (Manual and Power) Safety and Operations	1.5
Soldering	Safety Concerns Applicable to Brazing/Soldering	1.5
Total Hours		105

Leading and Developing People

Tooling U-SME Department	Related Training Instruction Topics Covered	RTI Hours
Supervisor Essentials	Team Building, Conflict Resolution, Project Management, Performance Management, Mentoring Others	24
Total		24