The Manufacturing Technician 1 ©(MT1) credential ensures that an individual has the skills expected in manufacturing positions including: CAD skills, computer controlled machine programming, precision measurement, process and machine trouble-shooting, problem-solving, machine maintenance and proficient use of diagnostic and statistical tools. The certification documents broad-based knowledge of the multi-step processes needed to successfully troubleshoot and solve problems beyond the scope of typical machine operators.

**Math and Measurement Skills Category**

**Aligns to Section 1 of the Manufacturing Technician Level 1 Exam**

**Measurement**
1. Using a Decimal Inch Machinist’s Rule to Measure a Length
2. Using a U.S. Ruler and Tape Measure to Measure a Length
3. Using a metric ruler
4. Measuring liquids/weights in Metric and U.S. Customary Units
5. Converting Between Common Fraction Inches and Decimal Inches.
6. Convert Between U.S. Customary Units and SI Metric Units.

**Algebra for Manufacturing**
1. Perform correct order of operation to simplify mathematical expressions.
2. Generate linear equations with one unknown for situations described in text.
3. Solve simple linear equations with one unknown.

**Math for Quality**
1. Read and interpret histograms, bar charts, line graphs, and scatter plots.
2. Interpret descriptive statistics: Mean median, mode, and range.
3. Demonstrate qualitative reasoning for situations involving statistical data and probabilities.

**Spatial Reasoning and Manufacturing Technology Skills Category**

**Aligns to Section 2 of the Manufacturing Technician Level 1 Exam**

**Spatial Reasoning**
1. Visually translate from 2D drawings to 3D images and back
   a. Identifying different views for given isometric drawing of an object.
   b. Identifying the different elements of an object in various views
2. Predict behavior of visual representations of simple mechanisms

**Mechanics**
1. Determine mechanical advantage of different systems of pulleys
2. Determine effects of different lever configurations on the force required to lift an object
3. Generate different configurations of gears and axels to increase power or speed.

**Fluid Power and Thermodynamics**
1. Predict the effects of changes in pressure on volume and temperature
2. Predict the effects of changes in temperature on volume and pressure
3. Predict the mechanical advantage of simple hydraulic and pneumatic systems.
**Electricity**
1. Generate causal explanations of the relationship between electrical and magnetic forces and explanations of how electric motors, generators, solenoids, and relay switches behave.
2. Generate causal explanations and predictions of electric circuit behavior involving simple series and parallel circuits containing relays, capacitors, resistors and simple devices such as light bulbs and pumps.

**Chemistry**
1. Core Concepts: Classify substances as a molecule, element, mixture, or compound; classify changes in substances as chemical reaction, mixture, or physical change; classify and apply characteristics acids and bases; interpret the periodic chart; and classify methods for separating mixtures (filtration, evaporation, distillation).
2. Chemical Reactions: Explain chemical bonding and structural changes that take place in common chemical reactions and interpret chemical formulas and equations.
3. Polymers: Generate explanations of molecular structural difference and physical characteristics between common types of polymers such as slime, flexi-putty, rubber and plastic bags.

**Manufacturing Processes & Control**
1. Generates the Sequence of Operation and a Flow Diagram for production tasks and processes.
2. Generate explanations of how electrical-mechanical controls and sensors operate in simple systems and devices.
3. Create flow charts for models (mock-up) of simple computer controlled systems such as a traffic light or washing machine.

**Quality and Business Acumen Skills Category**

**Aligns to Section 3 of the Manufacturing Technician Level 1 Exam**

**Quality and Lean Manufacturing Concepts**
1. Identify descriptions of manufacturing quality and lean production initiatives as examples of value stream mapping, waste elimination, 5S, DMAIC, and Total Productive Maintenance (TPM)
2. Create a process map and value stream map to improve a process or reduce waste
3. Demonstrate using an industry standard problem solving method such as DMAIC for improving production processes. Currently using DMAIC.

**SPC Basic concepts**
1. Determine plausible causes in fluctuations in processes based on statistical information (mean, range, & variation patterns)

**Business Acumen**
1. Predict how actions, strategies, and decisions impact the bottom line.
2. Classify examples of common business financial terms.

**Western Nevada College Manufacturing Technician Program**

Prepares students for the Manufacturing Skills Institute *Manufacturing Technician 1* exam with technical knowledge and practice activities.

**AIT 101** Fundamentals of Applied Industrial Technology – 4 Units
**AIT 155** Applied Industrial Technology Hands-on labs – 3 Units
**AIT 200** Applied Industrial Technology Projects – 3 Units