# Machining Level I Credential Overview

## CNC Mill Operations

### OVERVIEW

This certification validates that an individual is able to successfully machine parts by operating a computer numerical control (CNC) machine; maintain quality and safety standards; keep records; maintain equipment and supplies; and perform routine preventative maintenance.

<table>
<thead>
<tr>
<th>COMPETENCIES</th>
<th>KNOWLEDGE + SKILLS</th>
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</thead>
</table>
| Applied Mathematics           | Arithmetic  
Arithmetic  
IPM Calculations  
SFM to RPM Conversion  |
| Cutting Tool Assembly         | Configuration (LOC and EOH)  
Fitting (tightening and setting)  
Holder Applications  |
| Geometrical Dimensioning and Tolerancing | Feature Control Frame  
Geometric Control Symbols  
Geometric Tolerancing Categories  |
| Inspection                    | Feature with Size Verification  
Feature without Size Verification  
Flatness Verification  
Hole Gaging  |
| Machine Maintenance           | Coolants  
Oils and Lubrications  |
| Machine Safety                | Machine Guarding  |
| Machining Applications        | Drilling  
Face Milling  
Peripheral Milling  |
| Measurements                  | Reading Micrometers  
Reading Steel Rule  
Reading Vernier Scales  
Use of Calipers  |
| Operations                    | Deburring  
Fixture Offset Adjustments  
Geometry Offset Adjustments  
Machine Controls  |
| Print Reading                  | Block Tolerances  
Line Types and Conventions  
Orthographic Projection  |

**Applied Mathematics**
- Knowledge of Metric and Imperial systems.
- Knowledge of decimal places.
- Knowledge of addition, subtraction, multiplication, and division.
- Knowledge of percentages.

**Cutting Tool Assembly**
- Knowledge of tool holders.
- Knowledge of tool tightening and setting.

**Geometrical Dimensioning and Tolerancing**
- Knowledge of feature control frames.
- Knowledge of geometric tolerancing symbols.
- Knowledge of geometric tolerancing categories.

**Inspection**
- Knowledge of feature with size verification.
- Knowledge of feature without size verification.
- Knowledge of flatness verification.
- Knowledge of hole gaging.

**Machine Maintenance**
- Knowledge of coolants and oils and lubrications.
- Knowledge of machine guarding.

**Machining Applications**
- Knowledge of drilling.
- Knowledge of face milling.
- Knowledge of peripheral milling.

**Measurements**
- Knowledge of reading micrometers.
- Knowledge of reading steel rule.
- Knowledge of reading vernier scales.
- Knowledge of using calipers.

**Operations**
- Knowledge of deburring.
- Knowledge of fixture offset adjustments.
- Knowledge of geometry offset adjustments.
- Knowledge of machine controls.

**Print Reading**
- Knowledge of block tolerances.
- Knowledge of line types and conventions.
- Knowledge of orthographic projection.

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<tr>
<th>COMPETENCIES</th>
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<tr>
<td><strong>Shop Safety</strong></td>
<td>Blood Born Pathogen</td>
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<td>Fire Prevention/Suppression</td>
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<td>Hazardous Material Identification System (HMIS)</td>
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<td>Lock Out/Tag Out</td>
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<td>Personal Protective Equipment (PPE)</td>
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<td>Safety Data Sheets (SDS)</td>
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<td>Waste Removal</td>
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