



# Machining Level I Credential Overview

## Turning I (Turning Between Centers)

### OVERVIEW

This certification validates that an individual has the skills and knowledge to successfully complete process planning, between centers applications, machine set ups, operations, inspection techniques and safety standards.

### COMPETENCIES

### KNOWLEDGE + SKILLS

<b>Applied Mathematics</b>	Arithmetic IPR Calculations	SFM to RPM Conversion Use of Scientific Calculator
<b>Cutting Tool Assembly</b>	Fitting (tightening and setting) Inspection of Cutters	Inspection of Holders
<b>Cutting Tool Selection</b>	Cutter Applications Cutter Features/Attributes	Manufacturers Technical Data References
<b>Geometrical Dimensioning and Tolerancing</b>	Datum Reference Frame (DRF) Degrees of Freedom (DOF) Feature Control Frame Geometric Control Symbols	Geometric Tolerancing Categories Geometric Tolerancing Characteristics Geometric Tolerancing Zone Shapes Symbols Associated with Feature Control Frames
<b>Inspection</b>	Feature with Size Verification Feature without Size Verification Runout Verification	Surface Finish Verification Thread Gaging Total Runout Verification
<b>Machine Maintenance</b>	Coolants Oils and Lubrications	Refractometer Readings
<b>Machine Safety</b>	Machine Guarding	
<b>Machining Applications</b>	Facing Knurling OD Grooving	OD Threading OD Turning
<b>Material Preparation</b>	Bar Stock Sizes	Sawing Blanks
<b>Measurements</b>	Reading Micrometers Reading Steel Rules Reading Vernier Scales Use of Calipers	Use of Dial Indicators Use of Drop Indicators (travel dial) Use of Micrometers Use of Steel Rules
<b>Operations</b>	Deburring	Part Loading (chuck/collet)
<b>Print Reading</b>	Block Tolerances Line Types and Conventions Orthographic Projection	Surface Finish Requirements Title Blocks and Revisions



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# Turning Operations: Turning Between Centers

COMPETENCIES	KNOWLEDGE + SKILLS	
<b>Process Planning</b>	Machine Configuration Machine Selection	Operation Sequencing Workholding Concepts/Devices
<b>Setup</b>	Mounting Chucks/Collets Setting Tools (center and diameter)	Tailstock Alignment
<b>Shop Safety</b>	Blood Born Pathogen Fire Prevention/Suppression Hazardous Material Information System (HMIS) Lock Out/Tag Out	Personal Protective Equipment (PPE) Safety Data Sheets (SDS) Waste Removal