

CNC Training Course Flow (Tooling U)

1. Math & Applied Fundamentals

Start with math and geometry to build confidence in calculations and blueprint reading.

- Basic Measurement 101
 - Basics of Tolerance 121
 - Units of Measurement 112
 - Math Fundamentals 101
 - Math: Fractions and Decimals 111
 - Algebra Fundamentals 141
 - Geometry: Lines and Angles 151
 - Geometry: Triangles 161
 - Geometry: Circles and Polygons 171
 - Trigonometry: The Pythagorean Theorem 201
 - Trigonometry: Sine, Cosine, Tangent 211
 - Trigonometry: Sine Bar Applications 221
 - Shop Trig Overview 210
 - Shop Geometry Overview 170
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2. Manual Machining Foundations

Hands-on machine setup and operation to understand fundamentals.

- Overview of Machine Tools 121
 - Benchwork and Layout Operations 241
 - Manual Mill Setup 221
 - Manual Mill Operation 251
 - Engine Lathe Basics 211
 - Engine Lathe Setup 231
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3. Metal Cutting Theory & Tool Geometry

Understanding cutting mechanics before CNC.

- Cutting Processes 111
 - Basic Cutting Theory 201
 - Mill Tool Geometry 361
 - Lathe Tool Geometry 351
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4. CNC Programming & Operation

Progression from basics to offsets, coordinates, and cycles.

- History and Definition of CNC 202
- Introduction to CNC Machines 201
- Basics of the CNC Mill 212
- Basics of the CNC Lathe 211
- CNC Specs for the Mill 220
- CNC Specs for the Lathe 225
- Coordinates for the CNC Mill 222
- Coordinates for the CNC Lathe 221
- Offsets on the CNC Mill 262
- Offsets on the CNC Lathe 261
- Canned Cycles for the Mill 322
- Canned Cycles for the Lathe 321
- Basics of G Code Programming 231
- Introduction to CAD and CAM for Machining 241

5. Workholding & Fixturing

Finish with principles of securing parts for efficiency and safety.

- Supporting and Locating Principles 111
- Locating Devices 121
- Introduction to Workholding 101

6. Inspection & GD&T (Group Work)

Learn inspection methods early for quality awareness.

- Basic Measurement 101 (*review during inspection*)
 - Types of Prints & Engineering Drawings 132
 - Blueprint Reading 131
 - Introduction to GD&T 301
 - Major Rules of GD&T 311
 - GD&T Applications 312
 - Inspecting a Prismatic Part 321
 - Inspecting a Cylindrical Part 331
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