

## **Course Contents - MasterCAM**

### **Basics of Engineering Design**

*Basic design principles, specifications, and stages*

*Management and concurrent engineering*

*Print reading*

### **Conversions, Measurement, and Tools**

*Measurement terms*

*Machinist Scale - Fractional and Metric*

*Reading a Dial Caliper - calibration and application examples*

*Reading a Micrometer*

*Conversions - Metric to Metric, Metric to US customary, US customary to Metric*

### **Simple Metallurgy**

*Structures of matter and metallurgic properties*

*Metallurgy terminology*

*Testing and heat treating*

*Keys to remember*

### **Mathematics**

*Fractions - addition, subtraction, multiplication, and division*

*Decimals Overview - addition and subtraction*

*Geometry - lines, angles, arcs, plane figures, and solid figures*

*Cartesian Coordinates - plane overview, Mastercam viewports, and coordinate plane*

*Triangles - types, triangles, and the Pythagorean Theorem*

*Trigonometry Functions - sine, cosine, and tangent*

*Measurement Units - US customary and Metric*

### **Cutting Speeds and RPM**

*Cutting speeds and calculations*

*Cutting feed, feed rates, and calculations*

*RPM and calculations*

*Practical examples*

*Area rough, rest rough*

*Chip Formation, Load, and Removal Rates*

*Chip formation, load, and depth of cut*

*Chip formation practical applications*

### **Introduction to Machining Tolerances**

*Mechanical removal techniques, drilling, milling, reaming, and tapping*

*CAD/CAM terminology*

*Introduction to milling machines*

*Explore machining processes*

### ***Cutting Tools and Tool Holders***

*Cutting tools introduction and geometry*

*Cutting tools and machining practices*

*Cutting tool shapes*

*Cutting applications*

*Cutting tool materials*

*Proper holding*