

Precision Machine Technology Competency Profile



SAFETY

- Wear eye and ear protection according to OSHA specifications
- Wear hand and foot protection according to OSHA specifications
- Wear clothing considered safe according to OSHA specifications
- Confine long hair
- Remove jewelry
- Identify location of fire alarms and exits
- Report injuries to supervisor
- Maintain workstations in accordance with standards for cleanliness and safety
- Adhere to the directions given on MSDS labels and hazardous materials
- Interpret personal safety rights according to shop's Right to Know plan
- Identify the general housekeeping and maintenance procedures for tools and equipment
- Lock-out/tag-out mechanical equipment for repair and/or maintenance
- Perform visual checks of grounding and chord condition of all equipment

DEMONSTRATE BASIC SHOP MATH SKILLS

- Perform calculations using right angle trigonometric functions
- Solve blueprint interpretive situations using shop math skills
- Convert measurements from metric to English and vice-versa

USE MEASURING TOOLS

- Demonstrate knowledge of the application/function of each basic measuring tool
- Select the appropriate measuring tool for a given job
- Verify instrument accuracy using Jo-Blocks

INTERPRET BLUEPRINTS

- Identify the common drafting symbols
- Identify the types of views shown on a blueprint
- Locate the needed views of an object
- Identify the industry method for showing dimensions and tolerances
- Identify the types and methods of screw thread representation
- Identify the surface texture symbols and processes associated with them
- Interpret blueprint lines
- Interpret the blueprint symbols commonly used in geometric dimensioning and tolerancing

PERFORM BASIC LAYOUTS

- Mark the center of round stock using the center head
- Layout dimensions using scribe, divider, trammel
- Layout angles using a sine bar
- Measure angular surfaces using angle Jo-Blocks
- Secure work pieces in position using an angle plate

GRINDING MACHINES

- Identify the established safety procedures for grinding
- Identify the procedure for the care of grinding wheels
- Identify the different types of conventional wheels
- Sharpen tools using pedestal and bench grinders
- Dress grinding wheels
- Mount grinding wheels
- Select the appropriate work holding device

MILLING MACHINES

- Calculate cutting speeds and spindle RPM
- Calculate feed rates in inches per minute
- Mill square work mounted in vise
- Bore holes using a boring head
- Mill keyways
- Index work using a dividing head
- Identify the use and components of indexing heads
- Measure angular work pieces using a sine plate
- Set up rotary tables
- Mill using power feed accessories
- Follow the established safety procedures for milling machine maintenance

LATHES

- Identify the established safety procedures for lathe and turning machine maintenance
- Mount/true work pieces mounted in 3 and 4 jaw chucks
- Mount work pieces between centers
- Bore inside diameters
- Produce tapers
- Pick up threads on a lathe
- Calculate appropriate RPM for given materials
- Perform tapping operations using a lathe
- Support long pieces using a steady rest
- Mount work pieces in collets
- Select work holding devices appropriate for a given job

CNC

- Operate CNC lathe/Milling machines
- Set up CNC lathe/Milling machines
- Write programs for CNC lathes/Milling machines
- Create CNC program with CAD/CAM system

METALLURGY

- Correlate types of material properties

CAREER PLANNING

- Identify career options
- Research interests, knowledge and skills needed in an occupation

DECISION MAKING AND PROBLEM SOLVING

- Identify decisions to be made
- Make decisions based on values and goals