

Machine Tool Technology: Grades 9, 10, 11, 12

Adopted 2004

Ensuring industrial safety and environmental protection

A001. Demonstrate safe workplace practices **A001**

A002. Handle hazardous materials as assigned **A002**

Managing a career as a machinist

B001. Develop a short-term career plan **B001**

B002. Complete job application procedures **B002**

B003. Work as a member of a team to accomplish a goal **B003**

B004. Explain the management structure of a local machining company **B004**

B005. Identify rights and responsibilities of employees and employers in the machining industry **B005**

B006. Identify principles of technology that every employee should know to succeed in the machining industry **B006**

B007. Identify relationships between a machining company and the community **B007**

B008. Identify key elements of planning every employee should know to succeed in the machining industry **B008**

B009. Explain the basic principles of personal finance management **B009**

Planning and managing machining jobs

C001. Develop a process plan for a part requiring milling, drilling, turning, or grinding **C001**

C002. Write a set of directions for a machining-related task or project **C002**

Performing machining jobs

D001. Perform manual bench work operations, including deburring parts, performing press fits, and using bench vise and hand tools as applicable **D001**

D002. Perform manual layout operations, including laying out the location of hole centers and surfaces **D002**

D003. Perform between centers turning operations for straight turning **D003**

D004. Set up and carry out chucking operations for turning **D004**

D005. Perform routine power feed milling, using power feeds **D005**

D006. Perform routine vertical milling **D006**

D007. Perform routine surface grinding, location of surfaces, and squaring of surfaces, using manual surface grinders with a wheel 10" and smaller in diameter **D007**

D008. Perform routine drill press operations **D008**

D009. Set up and operate power saws for cutoff operations **D009**

D010. Explain the functions and operations of a CNC milling machine, CNC lathe, and wire electric discharge machine (EDM) **D010**

D011. Write simple RS274-D programs, using G and M codes for a CNC milling machine and/or CNC lathe **D011**

Performing quality control and inspection

E001. Inspect simple parts, using precision tools and techniques **E001**

E002. Inspect samples for the required data according to a sampling plan **E002**

Performing process adjustment and improvement

F001. Make process adjustments or improvements to the production of a single part **F001**

F002. Participate as a member of a team for routine production process improvement **F002**

Performing general maintenance

G001. Perform general housekeeping and maintenance **G001**

G002. Perform preventive maintenance on machine tools **G002**

G003. Manage tooling maintenance **G003**

Communicating with others

H001. Demonstrate reading skills on a level required for employment in the machining industry **H001**

H002. Demonstrate writing skills on a level required for employment in the machining industry **H002**

H003. Demonstrate speaking skills on a level required for employment in the machining industry **H003**

H004. Demonstrate listening skills on a level required for employment in the machining industry **H004**

Applying mathematical operations

I001. Perform basic arithmetic operations **I001**

I002. Apply basic geometric concepts and terminology to machining tasks **I002**

I003. Apply basic algebraic concepts and terminology to machining tasks **I003**

I004. Apply basic trigonometric concepts and terminology to machining tasks **I004**

I005. Apply basic statistical concepts and terminology to machining tasks **I005**

Developing decision-making and problem-solving skills

J001. Apply decision rules **J001**

J002. Apply basic problem-solving methods **J002**

Developing social skills and personal qualities

K001. Apply social skills in situations requiring cooperative relations with supervisors, team leaders, and team members **K001**

K002. Apply a strong work ethic in the performance of job duties and in the maintenance of positive employment relations **K002**

Using engineering drawings and sketches

L001. Interpret standard orthographic blueprints **L001**

L002. Interpret geometric dimensioning and tolerancing (GDT) orthographic blueprints **L002**

L003. Sketch orthographic and isometric projections of parts **L003**

L004. Interpret engineering drawings having multiple auxiliary views **L004**

L005. Interpret geometric dimensioning and tolerancing (GDT) drawings with multiple datums **L005**

Applying measurements

M001. Apply basic measuring instruments **M001**

M002. Apply precision measuring instruments **M002**

M003. Apply surface plate instruments **M003**

Applying metalworking theory

N001. Apply cutting theory **N001**

N002. Select tooling **N002**

N003. Apply material properties theory N003

N004. Apply machine tools theory N004

N005. Apply cutting fluids and coolants theory N005

Applying properties of materials

O001. Apply the properties of various metals to cutting problems O001

O002. Apply the properties of various nonmetals to cutting problems O002

Using computers in machining

P001. Demonstrate computer literacy on a level required for employment in the field of machining P001

P002. Use the computer as a tool for research and reporting of information P002
