



2024-2025

Technical Skills Assessment

Automated Manufacturing

Results by Standard

Legend (%)		
0-50%	51-75%	76-100%

Assessment: Automated Manufacturing Number tested: 46	% Correct 21-22	% Correct 22-23	% Correct 23-24	% Correct 24-25
CONTENT STANDARD 1.0: LAB ORGANIZATION AND SAFETY PROCEDURES	70.48%	67.12%	66.00%	63.55%
Performance Standard 1.1: General Lab Safety Rules and Procedures	73.09%	68.40%	69.13%	70.25%
1.1.1. Describe general shop safety rules and procedures.	52.00%	42.86%	39.53%	38.18%
1.1.3. Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities (i.e., personal protection equipment PPE).	68.00%	61.90%	60.47%	61.82%
1.1.4. Operate lab equipment according to safety guidelines.	60.00%	66.67%	72.09%	72.73%
1.1.5. Identify and use proper lifting procedures and proper use of support equipment.	96.00%	100.00%	97.67%	96.36%
1.1.6. Utilize proper ventilation procedures for working within the lab/shop area.	100.00%	95.24%	93.02%	98.18%
1.1.7. Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment.	56.00%	47.62%	30.23%	32.73%
1.1.9. Identify the location of the posted evacuation routes.	92.00%	80.95%	81.40%	94.55%
1.1.10. Identify and wear appropriate clothing for lab/shop activities.	72.00%	57.14%	74.42%	58.18%
1.1.11. Secure hair and jewelry for lab/shop activities.	96.00%	85.71%	95.35%	98.18%
1.1.13. Locate and interpret safety data sheets (SDS).	44.00%	52.38%	55.81%	60.00%
Performance Standard 1.2: Hand Tools	60.00%	61.11%	54.26%	53.03%
1.2.1. Identify hand tools and their appropriate usage.	48.00%	46.03%	40.31%	38.79%
1.2.2. Identify standards and metric designation.	68.00%	66.67%	60.47%	56.36%
1.2.3. Demonstrate the proper techniques when using hand tools.	52.00%	61.90%	46.51%	47.27%
1.2.5. Identify proper cleaning, storage and maintenance of tools.	96.00%	100.00%	97.67%	98.18%
Performance Standard 1.3: Power Tools and Equipment	79.00%	72.62%	75.00%	60.91%
1.3.1. Identify power tools and their appropriate usage.	60.00%	47.62%	60.47%	40.00%
1.3.2. Identify equipment and their appropriate usage.	92.00%	85.71%	79.07%	65.45%

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1.3.3. Demonstrate the proper techniques when using power tools and equipment.	68.00%	57.14%	65.12%	38.18%
1.3.5. Identify proper cleaning, storage and maintenance of power tools and equipment.	96.00%	100.00%	95.35%	100.00%
CONTENT STANDARD 2.0: APPLY FUNDAMENTAL PRINT READING, MEASURING, AND CADD	72.00%	68.42%	67.69%	58.85%
Performance Standard 2.1: Demonstrate Print Reading Practices	68.89%	63.49%	68.48%	58.99%
2.1.1. Interpret basic elements of a technical drawing (i.e., title block information, dimensions.	50.67%	47.62%	48.84%	41.82%
2.1.2. Identify industry standard symbols (i.e., hydraulic, pneumatic, electrical, welding, mechanical).	84.00%	76.19%	90.70%	76.36%
2.1.3. Prepare a materials list from a technical drawing.	96.00%	76.19%	90.70%	85.45%
2.1.4. Describe various types of drawings (i.e., part, assembly, pictorial, orthographic, isometric, and schematic).	12.00%	47.62%	34.88%	30.91%
2.1.5. Understand dimensioning and tolerance, sectional drawings, fasteners, tables, charts, and assembly drawings.	92.00%	76.19%	84.50%	70.91%
Performance Standard 2.2: Demonstrate Measuring and Scaling Techniques	71.50%	69.05%	63.66%	54.77%
2.2.1. Identify industry standard units of measure.	54.00%	42.86%	40.70%	43.64%
2.2.3. Determine appropriate engineering and metric scales.	72.00%	88.10%	73.26%	53.64%
2.2.4. Measure and calculate speed, distance, object size, area, and volume.	88.00%	90.48%	90.70%	70.91%
2.2.5. Determine and apply the equivalence between fractions and decimals.	96.00%	95.24%	81.40%	69.09%
2.2.6. Demonstrate proper use of precision measuring tools (i.e., micrometer, dial indicator, dial caliper) and inspecting parts to print.	68.00%	52.38%	54.65%	51.82%
Performance Standard 2.3 CADD, CAM	88.00%	88.10%	80.23%	74.55%
2.3.1. Develop three dimensional models (i.e., wireframe, surface, solid, or parametric).	92.00%	95.24%	88.37%	70.91%
2.3.2. Interpret and create design and working drawings.	84.00%	80.95%	72.09%	78.18%
CONTENT STANDARD 3.0: APPLY FUNDAMENTAL POWER SYSTEM PRINCIPLES	50.18%	52.81%	49.05%	47.11%
Performance Standard 3.1: Identify and Utilize Basic Mechanical Systems	72.00%	66.67%	68.60%	61.82%
3.1.1. Understand examples of the six simple machines, their attributes and components.	52.00%	57.14%	55.81%	43.64%
3.1.3. Explain concepts of mechanical advantage.	92.00%	76.19%	81.40%	80.00%
Performance Standard 3.2: Identify and Utilize Basic Fluid Systems	50.67%	50.79%	37.98%	35.76%
3.2.2. Identify and define the components of fluid systems.	44.00%	42.86%	39.53%	34.55%

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3.2.5. Explain the difference between gauge pressure and absolute pressure.	60.00%	71.43%	34.88%	45.45%
3.2.7. Discuss mechanical advantage using Pascal's law.	48.00%	38.10%	39.53%	27.27%
Performance Standard 3.3: Identify and Utilize Basic Electrical Systems	42.67%	49.21%	48.06%	47.88%
3.3.1. Define AC and DC electrical systems and terminology.	36.00%	61.90%	58.14%	65.45%
3.3.3. Describe the principles of generation, transmission, distribution, and storage of electricity.	16.00%	38.10%	37.21%	21.82%
3.3.5. Compute values of current, resistance, and voltage using Ohm's Law.	52.00%	42.86%	51.16%	49.09%
3.3.6. Identify series, parallel and series-parallel (combination) circuits.	72.00%	85.71%	74.42%	70.91%
3.3.7. Introduce single-phase and three-phase AC power.	24.00%	19.05%	9.30%	21.82%
3.3.10. Explain electrical motor systems and motor controls by application.	56.00%	47.62%	58.14%	58.18%
CONTENT STANDARD 4.0: IDENTIFY AND APPLY MANUFACTURING PROCESSES	66.50%	57.74%	64.24%	65.11%
Performance Standard 4.1: Identify Material Properties and Science	68.00%	55.56%	70.54%	69.09%
4.1.1. Identify the major material families used in manufacturing.	56.00%	52.38%	48.84%	50.91%
4.1.2. Differentiate between the various types of material properties and their application.	60.00%	33.33%	74.42%	69.09%
4.1.4. Explain how production is affected by the availability, quality and quantity of resources.	88.00%	80.95%	88.37%	87.27%
Performance Standard 4.2: Identify Manufacturing Processes	72.00%	58.33%	68.02%	65.45%
4.2.1. Identify and describe the five major manufacturing processes (i.e., forming, separating, joining, conditioning, and finishing).	54.00%	47.62%	46.51%	46.36%
4.2.2. Discuss the impact of manufacturing processes on the environment.	90.00%	69.05%	89.53%	84.55%
Performance Standard 4.3: Apply Manufacturing Processes	69.33%	63.49%	67.44%	65.15%
4.3.1. Demonstrate cutting methods of metals and plastics.	80.00%	83.33%	69.77%	78.18%
4.3.2. Demonstrate drilling methods of metals and plastics.	60.00%	50.00%	59.30%	57.27%
4.3.3. Demonstrate grinding methods of metals.	52.00%	38.10%	62.79%	40.00%
4.3.4. Demonstrate finishing methods of metals and plastics.	84.00%	76.19%	83.72%	80.00%
Performance Standard 4.4: Identify Fasteners	52.00%	47.62%	46.51%	60.61%
4.4.1. Identify various fastening methods (e.g., rivets, welds, adhesive, screws, seams, etc.).	48.00%	52.38%	39.53%	58.18%
4.4.2. Categorize fastening methods by appropriate applications.	54.00%	45.24%	50.00%	61.82%
CONTENT STANDARD 5.0: APPLY FUNDAMENTAL ELECTRONIC AND INSTRUMENTATION	39.33%	46.83%	50.78%	53.94%
Performance Standard 5.1: Demonstrate Control Technology and Automation Principles	39.33%	46.83%	50.78%	53.94%
5.1.1. Research the history and fundamentals of automation and control systems.	16.00%	16.67%	27.91%	35.45%
5.1.2. Identify applications of control logic.	48.00%	52.38%	65.12%	58.18%

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5.1.3. Distinguish programmable controllers and PLC components and their functions.	54.00%	64.29%	59.30%	60.00%
5.1.4. Interpret programming diagrams.	48.00%	66.67%	65.12%	74.55%
CONTENT STANDARD 6.0: MACHINING	66.33%	61.90%	63.47%	57.50%
Performance Standard 6.1: Manual Machining	71.00%	63.39%	66.13%	61.25%
6.1.1. Hand-sharpen cutting tools.	80.00%	80.95%	72.09%	70.91%
6.1.2. Perform maintenance on machines and tools.	72.00%	57.14%	76.74%	89.09%
6.1.3. Deburr workpieces.	80.00%	76.19%	76.74%	78.18%
6.1.4. Setup and operate power saws.	84.00%	80.95%	81.40%	67.27%
6.1.5. Setup and operate grinders.	42.67%	38.10%	41.86%	35.76%
6.1.6. Set up and operate lathes including tool and parts setups.	76.00%	64.29%	62.79%	58.64%
6.1.7. Set up and operate milling machines including tool and parts setups.	77.00%	65.48%	73.26%	64.09%
6.1.8. Use appropriate inspection gages.	80.00%	85.71%	81.40%	76.36%
Performance Standard 6.2: CNC Machining	57.00%	58.93%	58.14%	50.00%
6.2.1. Demonstrate an understanding of the control interface.	96.00%	100.00%	95.35%	96.36%
6.2.5. Demonstrate the ability to verify and dry run the program.	60.00%	76.19%	53.49%	54.55%
6.2.6. Demonstrate the ability run the NC program.	76.00%	57.14%	72.09%	52.73%
6.2.7. Demonstrate an understanding of NC programming.	52.00%	50.00%	51.16%	37.27%
6.2.8. Demonstrate an understanding of coordinate systems.	40.00%	40.48%	46.51%	42.73%
6.2.10. Demonstrate the ability to edit an NC program.	40.00%	57.14%	48.84%	36.36%
CONTENT STANDARD 7.0: ADDITIVE (3D) PRINTING	56.00%	47.62%	55.81%	58.18%
Performance Standard 7.1: Operation	56.00%	47.62%	55.81%	58.18%
7.1.1. Setup and operate a 3D printer.	56.00%	47.62%	55.81%	58.18%
CONTENT STANDARD 8.0 ROBOTICS AND MATERIALS HANDLING SYSTEMS	85.33%	90.48%	86.82%	87.27%
Performance standard 8.1 Process Automation	85.33%	90.48%	86.82%	87.27%
8.1.1. Demonstrate the knowledge of robotics and material handling equipment.	100.00%	95.24%	93.02%	92.73%
8.1.2. Discuss conveyors, robotic arms, material handlers, pick-and-place technology.	78.00%	88.10%	83.72%	84.55%