EMPLOYABILITY PROFILE
Electrical Technology

Industry Based Skill Standards

Proficiency Definitions

NA = Not Applicable	1 = Developing	2 = Basic	3 = Proficient	4 = Mastery

Design Process	9th	10th	11th	12th
Define and apply the design process.				
Create a sketch of a multiview drawing given an isometric drawing.				
Explain the factors involved in brainstorming, prototyping and reverse engineering.				
Measuring Tools	9th	10th	11th	12th
Demonstrate mastery of measuring instruments; scale and tape measure.				
Identify precision measuring devices.				
Demonstrate mastery of Vernier Calipersand Micrometers.				
Machine Tool Fundamentals	9th	10th	11th	12th
Demonstrate basic hand tool care and use (e.g., drills, saws, wrenches).				
Perform basic troubleshooting maintenance procedures.				
Identify specific machine tools and their function.				
Construct component from an assembly drawing.				
Math and Science Measurements	9th	10th	11th	12th
Develop and interpret graphs and charts.				
Solve problems involving geometric shapes, using formulas.				
Calculate torque, speed, voltage, and ratios using standard equations.				
Safety	9th	10th	11th	12th
Use electrical power tools safely.				
Perform a Lockout and Tag out procedure.				
Complete OSHA 10 safety course.				
Explain and demonstrate basic industrial safety rules and how to report unsafe conditions.				
Identify fire exits, firefighting equipment, and evacuation procedures.				
Perform an equipment safety check.				
Locate and interpret an SDS document.				
Identify and properly don and doff proper personal protective gear.				
Technical Drawings	9th	10th	11th	12th
Develop 2 dimensional drawings with AutoCAD.				
Interpret commonly used symbols from a drawing.				
Determine dimensions and tolerances from a drawing.				
Extract information from a title block.				
Identify the type of lines used on a drawing.				
Mechanical Drive Systems				
Explain the function of a mechanical drive.				
Identify and demonstrate the use of different types of mechanical drives including key fasteners, power transmission, spur gears and multiple shaft drives, v-belt, and chain drives.				
Computer Use	9th	10th	11th	12th
Develop charts and graphs from data.				
Describe different methods of tracking inventory.				
Demonstrate use of Microsoft Office applications.				

Electronics and Electrical Circuits	9th	10th	11th	12th
Identify electrical components and what they are used for.				
Identify volts, amps, and resistance in electrical theory.				
Explain magnetism as it applies to electrical theory.				
Explain the resistor color code chart symbols for circuit components.				
Explain ways in which electricity is generated, transmitted, and used.				
Use standard lab equipment, including digital multi-meter, analog multi-meter, DC power supply, function generator and oscilloscope.				
Define and compute using Ohm's Law, Watt's Law, Kirchhoff's Voltage and Current Laws, as well as the Voltage and Current divider rules.				
Explain how AC and DC are different.				
Interpret basic ladder diagrams.				
Define Thevenin's and Norton's Theorems.				
Analyze resistive DC series, parallel and series/parallel circuits				
Analyze AC series, parallel and series/parallel, R, L and C circuits.				
Verify circuit analysis by constructing, troubleshooting, and evaluating circuits.				
Document and communicate circuit analysis with algebraic statements.				
Digital Electronics	9th	10th	11th	12th
Convert numeric values from one base system to another.				
Implement any Boolean function having up to six variables.				
Design a sequential logic circuit.				
Predict electrical output levels expected for specified static and dynamic inputs.				
Design and implement a logic network of up to 20 discrete gates.				
Design and operate a digital arithmetic circuit capable of performing signed binary two's complement addition and subtraction.				
Interpret or demonstrate the operation of half and full adders, exclusive-OR and exclusive-NOR gates, shift registers, multiplexers and demultiplexers, and bus-connected networks.				
Use commercial CPLD hardware and software to design, implement and simulate the operation of digital circuits.				
Problem Solving and Failure Analysis				
Explain the application of problem solving to the design process.				
Analyze and troubleshoot designs.				
Explain why systems fail.				
Describe how data analysis is applied to failure analysis.				