

Student's Name/Initials

Date

Teacher's Initials

Date

**STUDENT PROFILE
(ELECTRONICS TECHNOLOGY 1-4)
Course Codes: 6133, 6134, 6135, 6136
Units: 1, 2, or 3**

DIRECTIONS: Evaluate the student using the applicable rating scales below and check the appropriate box to indicate the degree of competency. The ratings 3, 2, 1, and N are not intended to represent the traditional school grading system of A, B, C, and D. The description associated with each of the ratings focuses on the level of student performance or cognition for each of the competencies listed below.

If student takes Introduction to Construction and scores 70% on all assessments (A-H), he or she does not have to repeat these modules in Air Conditioning and Refrigeration Technology, Building Construction, Cabinetmaking, Carpentry, Electricity, Masonry, Mechatronics Integrated Technologies, Plumbing, or Welding.

PERFORMANCE RATING

- 3 - Skilled--can perform task independently with no supervision
- 2 - Moderately skilled--can perform task completely with limited supervision
- 1 - Limitedly skilled--requires instruction and close supervision
- N - No exposure--has no experience or knowledge of this task

COGNITIVE RATING

- 3 - Knowledgeable--can apply the concept to solve problems
- 2 - Moderately knowledgeable--understands the concept
- 1 - Limited knowledge--requires additional instruction
- N - No exposure--has not received instruction in this area

CORE MODULES

UNIT A: DEMONSTRATING SAFE WORK HABITS AND PROCEDURES TO MEET OSHA STANDARDS (CONTINUOUS THROUGHOUT THE PROGRAM OF STUDY)

3 2 1 N

- ___ ___ ___ ___ 1. Identify various types, purposes, and operation of fire extinguishers.
- ___ ___ ___ ___ 2. Identify and practice shop safety, including environmental hazards.
- ___ ___ ___ ___ 3. Identify electrical hazards.
- ___ ___ ___ ___ 4. Identify and practice safe soldering methods.
- ___ ___ ___ ___ 5. Identify various safety measures and procedures and when and how to use them.
- ___ ___ ___ ___ 6. Identify environmental protection measures and procedures and when and how to use them.

- ___ ___ ___ ___ 7. Demonstrate safe and proper use of hand tools.
- ___ ___ ___ ___ 8. Demonstrate various methods of controlling static discharge.
- ___ ___ ___ ___ 9. Demonstrate safe and proper use of test equipment
- ___ ___ ___ ___ 10. Demonstrate the use and care of appropriate personal protective equipment (PPE).
- ___ ___ ___ ___ 11. Explain the importance of hazard communications (HazCom) and Material Safety Data Sheets (MSDS).
- ___ ___ ___ ___ 12. Complete safety test.

UNIT B: DEMONSTRATING PROFICIENCY IN DC ELECTRONICS

3 2 1 N

- ___ ___ ___ ___ 1. Identify electronic components and their schematic symbols utilizing existing codes and notations (e.g., color codes and exponential notation).

- ___ ___ ___ ___ 2. Interpret schematic, block, and pictorial diagrams.
- ___ ___ ___ ___ 3. Apply Ohm's law in solving DC electronic problems.
- ___ ___ ___ ___ 4. Apply Watt's law in solving DC electronic power problems.
- ___ ___ ___ ___ 5. Apply Kirchhoff's laws in solving DC electronic problems.
- ___ ___ ___ ___ 6. Evaluate and test DC series circuits.
- ___ ___ ___ ___ 7. Evaluate and test DC parallel circuits.
- ___ ___ ___ ___ 8. Evaluate and test DC series-parallel circuits.
- ___ ___ ___ ___ 9. Evaluate and test sources of DC signals and power.
- ___ ___ ___ ___ 10. Evaluate and test DC resistive devices.
- ___ ___ ___ ___ 11. Evaluate and test circuit controls (e.g., switches, fuses, circuit breakers, relays).

UNIT C: DEMONSTRATING PROFICIENCY IN AC ELECTRONICS

3 2 1 N

- ___ ___ ___ ___ 1. Identify electronic components and their schematic symbols.
- ___ ___ ___ ___ 2. Interpret schematic, block, and pictorial diagrams.
- ___ ___ ___ ___ 3. Solve AC electronics problems involving current, voltage, resistance, reactance, impedance, and power.
- ___ ___ ___ ___ 4. Describe the function and operation of capacitors in AC circuits.
- ___ ___ ___ ___ 5. Describe the function and operation of inductors in AC circuits.
- ___ ___ ___ ___ 6. Describe the function and operation of RL, RC, and RLC circuits.
- ___ ___ ___ ___ 7. Describe the function and operation of transformers.

UNIT D: DEMONSTRATING PROFICIENCY IN SEMICONDUCTOR DEVICES

3 2 1 N

- ___ ___ ___ ___ 1. Identify electronic components and their schematic symbols.
- ___ ___ ___ ___ 2. Interpret schematic, block, and pictorial diagrams.
- ___ ___ ___ ___ 3. Describe the function and operation of semiconductor devices
- ___ ___ ___ ___ 4. Describe the functions and operations of diode circuits, rectifiers, and transistor amplifiers.
- ___ ___ ___ ___ 5. Demonstrate techniques for handling and replacing semiconductors.

UNIT E: DEMONSTRATING PROFICIENCY IN DIGITAL ELECTRONICS

3 2 1 N

- ___ ___ ___ ___ 1. Identify and convert number systems: binary, octal, decimal, hexadecimal, and binary coded decimal.
- ___ ___ ___ ___ 2. Identify electronic components and their schematic symbols.
- ___ ___ ___ ___ 3. Interpret schematic, block, and pictorial

diagrams.

- ___ ___ ___ ___ 4. Interpret and develop truth tables and Boolean expressions of logic circuits.
- ___ ___ ___ ___ 5. Test the operation of logic gates.
- ___ ___ ___ ___ 6. Test the operation of clock and timing circuits.
- ___ ___ ___ ___ 7. Build and test combinational logic circuits for a given application.
- ___ ___ ___ ___ 8. Test counter and controller circuits for sequential logic applications.
- ___ ___ ___ ___ 9. Interpret information on integrated circuits (IC) data and specification sheets.
- ___ ___ ___ ___ 10. Test the operation of analog to digital (A/D) and digital to analog (D/A) converters.

UNIT F: DEMONSTRATING PROFICIENCY IN SOLDERING AND ASSEMBLING TECHNIQUES

3 2 1 N

- ___ ___ ___ ___ 1. Select and maintain soldering and desoldering tools.
- ___ ___ ___ ___ 2. Solder and desolder components.
- ___ ___ ___ ___ 3. Select and install connection devices (e.g., terminal, lug, crimp, spade).

UNIT G: DEMONSTRATION PROFICIENCY IN USE OF TEST EQUIPMENT

3 2 1 N

- ___ ___ ___ ___ 1. Measure voltage, current, and resistance using multimeters (e.g., VOM, DMM, DVM).
- ___ ___ ___ ___ 2. Measure voltage, time, frequency, and phase angle using an oscilloscope.
- ___ ___ ___ ___ 3. Operate a power source.
- ___ ___ ___ ___ 4. Operate signal and function generators.

The student may be exposed to this additional technical content depending on each school's unique situation.

ADVANCED ELECTRONICS TECHNOLOGY CONETEN:

3 2 1 N

- ___ ___ ___ ___ 1. Apply network theorems (superposition, Thevenin's, and Norton's).
- ___ ___ ___ ___ 2. Perform vector analysis in RL, RC, and RLC circuits.
- ___ ___ ___ ___ 3. Demonstrate uses of thyristors, analog ICs, and optoelectric devices.
- ___ ___ ___ ___ 4. Perform arithmetic operations in various digital number systems.
- ___ ___ ___ ___ 5. Test the operations of binary adders.
- ___ ___ ___ ___ 6. Apply De Morgan's theorem to simplify Boolean expressions.

INDUSTRIAL ELECTRONIC CONTROL SYSTEMS:

3 2 1 N

- ___ ___ ___ ___ 1. Identify electronic component schematic symbols.
- ___ ___ ___ ___ 2. Test and repair motor control systems (e.g., starters, control wiring, variable-speed drives, overcurrent protection).
- ___ ___ ___ ___ 3. Identify and test sensors.
- ___ ___ ___ ___ 4. Test and repair solid-state power controls.
- ___ ___ ___ ___ 5. Test, repair, and maintain computer-controlled systems (e.g., CNC, robotics, and process control).

PROGRAMMABLE LOGIC CONTROLS:

3 2 1 N

- ___ ___ ___ ___ 1. Identify electronic component schematic symbols.
- ___ ___ ___ ___ 2. Describe the function and purpose of a programmable logic controller (PLC).
- ___ ___ ___ ___ 3. Compare hardwired and PLC systems.
- ___ ___ ___ ___ 4. Convert between number systems. robotics, and process control).

- ___ ___ ___ ___ 6. Describe the purpose of the various power supplies used within a PLC.
- ___ ___ ___ ___ 7. Construct input/output (I/O) circuits.
- ___ ___ ___ ___ 8. Define the function of the PLC processor module.
- ___ ___ ___ ___ 9. Describe the interrelations between microprocessor components.
- ___ ___ ___ ___ 10. State the characteristics of the different types of memory.
- ___ ___ ___ ___ 11. Demonstrate the features of relay ladder logic instruction categories.
- ___ ___ ___ ___ 12. Demonstrate the principles used to correlate PLC hardware components to software instructions.
- ___ ___ ___ ___ 13. Convert a hardware ladder diagram to a PLC ladder diagram.
- ___ ___ ___ ___ 14. Program PLC using above diagram.
- ___ ___ ___ ___ 15. Troubleshoot problems in PLC circuit using a given diagram.

**BASIC INSTALLATION AND MAINTENANCE
PROCEDURES FOR AUDIO AND VIDEO
EQUIPMENT:**

- 3 2 1 N
- ___ ___ ___ ___ 1. Describe operation of audio and video equipment.
 - ___ ___ ___ ___ 2. Install and maintain major types of audio and video equipment. a series-parallel circuit.