



EXAM INFORMATION

Items

27

Points

40

Prerequisites

ELECTRONICS I

Grade Level

10-12

Course Length

ONE SEMESTER

Career Cluster

MANUFACTURING

SCIENCE, TECHNOLOGY,

ENGINEERING, AND MATHEMATICS

Performance Standards

INCLUDED

Certificate Available

YES

DESCRIPTION

The second in a sequence of courses that prepares individuals to apply technical knowledge and skills to assemble and operate electrical/electronic equipment used in business, industry, and manufacturing. Instruction includes training in safety, numbering systems, Boolean algebra, logic diagrams, digital devices, and combinational logic circuits.

EXAM BLUEPRINT

STANDARD**PERCENTAGE OF EXAM**

1- Safety Practices	10%
2- Number Systems	25%
3- Logic Gates and Logic States	40%
4- Combinational Logic Circuits	15%
5- Sequential Logic Circuits	10%



STANDARD 1

STUDENTS WILL FOLLOW SAFETY PRACTICES

- Objective 1** Identify potential safety hazards and follow general laboratory safety practices.
1. Assess workplace conditions with regard to safety and health.
 2. Identify potential safety issues and align with relevant safety standards to ensure a safe workplace/jobsite.
 3. Describe typical electric shock hazards in industry.
 4. Describe the effects of electricity on the human body.
 5. Locate and understand the use of shop safety equipment.
 6. Select appropriate personal protective equipment.
- Objective 2** Use safe work practices.
1. Use personal protective equipment according to manufacturer rules and regulations.
 2. Follow correct procedures when using any hand or power tools.
- Objective 3** Complete a basic safety test without errors (100%) before using any tools or shop equipment.

Standard 1 Performance Evaluation included below (Optional)

STANDARD 2

STUDENTS WILL UNDERSTAND VARIOUS NUMBER SYSTEMS USED IN DIGITAL ELECTRONICS

- Objective 1** Understand the structure of, and how to count in, various numbering systems.
1. Use the decimal number system.
 2. Use the octal number system.
 3. Use the hexadecimal number system.
 4. Use the binary number system.
- Objective 2** Perform operations in various numbering systems.
1. Convert between decimal and binary.
 2. Convert between octal and binary.
 3. Convert between hexadecimal and binary.

Standard 2 Performance Evaluation included below (Optional)

STANDARD 3

STUDENTS WILL UNDERSTAND THE FUNCTIONS OF TYPICAL LOGIC GATES AND THEIR LOGIC STATES

- Objective 1** Describe the function of and create truth tables for typical logic gates.
1. AND, NAND
 2. OR, NOR
 3. XOR, XNOR
 4. Buffer (YES), Inverter (NOT)



Standard 3 Performance Evaluation included below (Optional)

STANDARD 4

STUDENTS WILL UNDERSTAND, CONSTRUCT, AND TEST COMBINATIONAL LOGIC CIRCUITS

- Objective 1 From schematic diagrams and specifications, write a truth table and the Boolean equation for combinational logic circuits.
- Objective 2 Simplify combinational logic circuits using Boolean identities, De Morgan's Theorems, and logical equivalencies.
- Objective 3 Construct combinational logic circuits.
- Objective 4 Predict the logic levels in all parts of combinational logic circuits.
- Objective 5 Use a logic probe to test and verify logic levels in all parts of combinational logic circuits.

Standard 4 Performance Evaluation included below (Optional)

STANDARD 5

STUDENTS WILL UNDERSTAND, CONSTRUCT, AND TEST SEQUENTIAL LOGIC CIRCUITS

- Objective 1 Define the properties of:
 - 1. D flip-flop.
 - 2. JK flip-flop.
- Objective 2 Describe the operation and application of:
 - 1. Shift registers
 - 2. Frequency dividers and counters
 - 3. Synchronous up/down and shift counters
 - 4. Multivibrators
- Objective 3 Construct and test sequential logic circuits

Standard 5 Performance Evaluation included below (Optional)



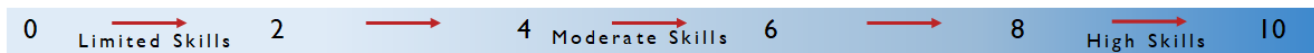
Electronics II Performance Standards (Optional)

Performance assessments may be completed and evaluated at any time during the course. The following performance skills are to be used in connection with the associated standards and exam. To pass the performance standard the student must attain a performance standard average of **8 or higher** on the rating scale. Students may be encouraged to repeat the objectives until they average **8 or higher**.

Students Name _____

Class _____

PERFORMANCE RATING SCALE



STANDARD 1 Safety Practices

Score:

- Follow safety practices

STANDARD 2 Number Systems

Score:

- Understand various number systems used in digital electronics

STANDARD 3 Logic Gates and their Logic States

Score:

- Understand the functions of typical logic gates and their logic states

STANDARD 4 Combinational Logic Circuits

Score:

- Understand, construct, and test combinational logic circuits

STANDARD 5 Sequential Logic Circuits

Score:

- Understand, construct, and test sequential logic circuits

PERFORMANCE STANDARD AVERAGE SCORE: