



2024 Edition

SCOUTMASTER BUCKY

Electronics Merit Badge

SCOUTS PARTICIPATING IN A SCOUTMASTER BUCKY MERIT BADGE OPPORTUNITY (ONLINE OR IN PERSON), PLEASE CONSIDER ALSO USING THE ELECTRONICS MERIT BADGE CLASS PREPARATION PAGE FOR CLARIFICATIONS, INSIGHTS, AND EXPECTATIONS.

<https://scoutmasterbucky.com/merit-badges/electronics/electronics-cpp.pdf>

ELECTRONICS MERIT BADGE WORKBOOK

REQUIREMENT 1: Describe the safety precautions you must exercise when using, building, altering, or repairing electronic devices.

Notes:

REQUIREMENT 2a: Draw a simple schematic diagram. It must show resistors, capacitors, and transistors or integrated circuits. Use the correct symbols. Label all parts.

REQUIREMENT 2b: Tell the purpose of each part.



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REQUIREMENT 3a: Show the right way to solder and desolder.

This requirement will be reviewed with your merit badge counselor during the class.

BE PREPARED!

Notes:

REQUIREMENT 3b: Show how to avoid heat damage to electronic components.

This requirement will be reviewed with your merit badge counselor during the class.

BE PREPARED!

Notes:

REQUIREMENT 3c: Tell about the function of a printed circuit board.

Notes:



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REQUIREMENT 3c: Tell what precautions should be observed when soldering printed circuit boards.

Notes:

REQUIREMENT 4a: Discuss how to use electronics for a control purpose.

Notes:

REQUIREMENT 4a: Discuss the basic principles of digital techniques.

Notes:



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REQUIREMENT 4a: Discuss how to use electronics for three different audio applications.

AUDIO APPLICATION #1

Notes:

AUDIO APPLICATION #2

Notes:

AUDIO APPLICATION #3

Notes:

REQUIREMENT 4b: Show how to change three decimal numbers into binary numbers and three binary numbers into decimal numbers.

Notes:



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REQUIREMENT 4c: **CHOOSE ONE OF THE FOLLOWING THREE PROJECTS.** For your project, find or create a schematic diagram. To the best of your ability, explain to your counselor how the circuit you built operates.

- i. A control device
- ii. A digital circuit
- iii. An audio circuit.

Don't forget to bring any work you have done in preparation to share with your merit badge counselor.

This requirement will be reviewed with your merit badge counselor during the class.

BE PREPARED!

Notes:

REQUIREMENT 5a: Show how to solve a simple problem involving current, voltage, and resistance using Ohm's law.

Don't forget to bring any work you have done in preparation to share with your merit badge counselor.

This requirement will be reviewed with your merit badge counselor during the class.

Notes:



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REQUIREMENT 5b: Tell about the need for and the use of test equipment in electronics. Name three types of test equipment. Tell how they operate.

TEST EQUIPMENT #1

Name:

How it operates:

TEST EQUIPMENT #2

Name:

How it operates:

TEST EQUIPMENT #3

Name:

How it operates:

REQUIREMENT 5c: Demonstrate to your counselor how to read the colored bands of a resistor to determine its resistance value.

Don't forget to bring any work you have done in preparation to share with your merit badge counselor.

This requirement will be reviewed with your merit badge counselor during the class.

Notes:



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REQUIREMENT 6: Find out about three career opportunities in electronics that interest you. Discuss with and explain to your counselor what training and education are needed for each position.

CAREER OPPORTUNITY #1

Title:

Educational Requirements:

Training Requirements:

CAREER OPPORTUNITY #2

Title:

Educational Requirements:

Training Requirements:

CAREER OPPORTUNITY #3

Title:

Educational Requirements:

Training Requirements: