



SCOUTMASTER BUCKY

Scouts participating in a Scoutmaster Bucky merit badge opportunity, whether online or in person, should consider using the Robotics merit badge pamphlet for discovery and knowledge, along with the class preparation pages for clarifications, insights, and expectations.

<https://scoutmasterbucky.com/merit-badges/robotics/robotics-pamphlet.pdf>

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

REQUIREMENT 4a REQUIRES COUNSELOR APPROVAL.

REQUIREMENT 1a: Explain to your counselor the most likely hazards you may encounter while working with robots and what you should do to anticipate, mitigate and prevent, and respond to these hazards.

HAZARD #1

Description:

Anticipate:

Help Prevent:

Mitigate:

Respond:



SCOUTMASTER BUCKY

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| HAZARD #2 |
| Description: |
| Anticipate: |
| Help Prevent: |
| Mitigate: |
| Respond: |



SCOUTMASTER BUCKY

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| HAZARD #3 |
| Description: |
| Anticipate: |
| Help Prevent: |
| Mitigate: |
| Respond: |



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| HAZARD #4 |
| Description: |
| Anticipate: |
| Help Prevent: |
| Mitigate: |
| Respond: |



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| HAZARD #5 |
| Description: |
| Anticipate: |
| Help Prevent: |
| Mitigate: |
| Respond: |



SCOUTMASTER BUCKY

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| HAZARD #6 |
| Description: |
| Anticipate: |
| Help Prevent: |
| Mitigate: |
| Respond: |



SCOUTMASTER BUCKY

REQUIREMENT 1a: Describe the appropriate safety gear and clothing that should be used when working with robotics.

Notes:

REQUIREMENT 1b: Discuss first aid and prevention for the types of injuries that could occur while participating in robotics activities and competitions, including cuts, eye injuries, and burns (chemical or heat).

CUTS:

Prevention:

Symptoms:

Treatment:



SCOUTMASTER BUCKY

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| EYE INJURIES: |
| Prevention: |
| Symptoms: |
| Treatment: |
| BURNS (CHEMICAL OR HEAT): |
| Prevention: |
| Symptoms: |
| Treatment: |



SCOUTMASTER BUCKY

REQUIREMENT 2a: Discuss with your counselor the kinds of things robots can do.

Notes:

REQUIREMENT 2a: Discuss with your counselor how robots are best used today.

Notes:

REQUIREMENT 2b: Discuss with your counselor the similarities and differences between remote-control vehicles, telerobots, and autonomous robots.

Notes:



SCOUTMASTER BUCKY

REQUIREMENT 2c: Discuss with your counselor three different methods robots can use to move themselves other than wheels or tracks. Describe when it would be appropriate to use each method.

METHOD #1:

Method:

When appropriate to use:

METHOD #2:

Method:

When appropriate to use:

METHOD #3:

Method:

When appropriate to use:



SCOUTMASTER BUCKY

REQUIREMENT 3:

Discuss with your counselor three of the five major fields of robotics (human-robot interface, mobility, manipulation, programming, sensors) and their importance to robotics development. Discuss either the three fields as they relate to a single robot system OR talk about each field in general. Find pictures or at least one video to aid your discussion.

Human-Robot Interface:

Mobility:

Manipulation:



SCOUTMASTER BUCKY

Programming:

Sensors:

Notes:

REQUIREMENT 3: Find pictures or at least one video to aid your discussion.

Don't forget to bring your pictures or video to share with your counselor
This requirement must be reviewed with your merit badge counselor.
BE PREPARED!



SCOUTMASTER BUCKY

REQUIREMENT 4a: With your counselor's approval, choose a task for the robot or robotic subsystem that you plan to build. Include sensor feedback and programming in the task. Document this information in your robot engineering notebook.

COUNSELOR APPROVAL: IS REQUIRED.

Counselor's Name

Phone or Email

Counselor's Signature

Date

☐

approved

REQUIREMENT 4b: Design your robot. The robot design should use sensors and programming and have at least 2 degrees of freedom. Document the design in your robot engineering notebook using drawings and a written description.

REQUIREMENT 4c: Build a robot or robotic subsystem of your original design to accomplish the task you chose for requirement 4(a).

REQUIREMENT 4d: Discuss with your counselor the programming options available for your robot. Then do ONE of the following:

1. Program your robot to perform the task you chose for your robot in 4a. Include a sample of your program's source code in your robot engineering notebook.
2. Prepare a flowchart of the desired steps to program your robot for accomplishing the task in 4(a). Include procedures that show activities based on sensor inputs. Place this in your robot engineering notebook.

REQUIREMENT 4e: Test your robot and record the results in your robot engineering notebook. Include suggestions on how you could improve your robot, as well as pictures or sketches of your finished robot.

For Requirement 4 it clearly states to document your information in your Robot Engineering Notebook. Consider using the Scoutmaster Bucky Robot Engineering Notebook to aid you.

Make sure you have your Robot Engineering Notebook completed and ready for your counselor to review.

ONLINE CLASS: The instructor / counselor will accommodate review of any Scout's work on this Requirement during the class; however, it must be noted that NO class time will be allotted for working on Requirement 4.

IN-PERSON CLASS: There will be class time allotted for Requirement 4, however no guarantee of completion of any or all components for Requirement 4 can be made. Each of these components can take a good amount of time. The instructor / counselor will provide means for completing any unfinished requirement components at the class.

This requirement must be reviewed with your merit badge counselor.

BE PREPARED!



SCOUTMASTER BUCKY

REQUIREMENT 5a: Demonstrate for your counselor the robot you built in requirement 4.

Don't forget to bring your robot to share with the merit badge counselor
This requirement must be reviewed with your merit badge counselor.
BE PREPARED!

Don't forget to bring your Robot Engineering Notebook to share with the merit badge counselor
This requirement must be reviewed with your merit badge counselor.
BE PREPARED!

REQUIREMENT 5b: Share your robot engineering notebook with your counselor. Talk about how well your robot accomplished the task, the improvements you would make in your next design, and what you learned about the design process.

Don't forget to bring your Robot Engineering Notebook to share with the merit badge counselor
This requirement must be reviewed with your merit badge counselor.
BE PREPARED!

DO ONE OF THE FOLLOWING (6A or 6B) FOR REQUIREMENT 6

REQUIREMENT 6a: Attend a robotics competition and report to your counselor what you saw and learned about the competition and how teams are organized and managed.

Robotics Competition:

Location and Date:

Notes:



SCOUTMASTER BUCKY

REQUIREMENT 6b: Learn about three youth robotics competitions. Tell your counselor about these, including the type of competition, time commitment, age of the participants, and how many teams are involved.

ROBOTICS COMPETITION #1:

Name of Competition:

Date and Location:

Type of Competition:

Time Commitment:

Age of Participants:

How Many Teams Involved:

Notes:



SCOUTMASTER BUCKY

| ROBOTICS COMPETITION #2: |
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| Name of Competition: |
| Date and Location: |
| Type of Competition: |
| Time Commitment: |
| Age of Participants: |
| How Many Teams Involved: |
| Notes: |



SCOUTMASTER BUCKY

| ROBOTICS COMPETITION #3: |
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| Name of Competition: |
| Date and Location: |
| Type of Competition: |
| Time Commitment: |
| Age of Participants: |
| How Many Teams Involved: |
| Notes: |



SCOUTMASTER BUCKY

REQUIREMENT 7: Name three career opportunities in robotics.

Career Opportunity #1:

Career Opportunity #2:

Career Opportunity #3:

REQUIREMENT 7: Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor.

Selected Career Opportunity:

Education Requirements:

Training Requirements:

Experience Requirements:

REQUIREMENT 7: Explain why this profession might interest you.

Notes: