

Space Exploration



CWK Merit Badge pre-requisite requirements

Space the final frontier... We will boldly go where no other scout has gone before... We will discuss the history and future of space exploration program, and successfully launch and re-cover rockets built by each scout.

It should be noted that this merit badge class is not meant for those who just want to come and see what they can get done. It is possible to complete this merit badge by being properly prepared and having done the preparation work prior to the class. Preparation is a MUST.

Bring the Space Exploration Merit Badge pamphlet that you read, a merit badge worksheet, and a scoutmaster signed merit badge card (blue or another color you prefer).

Link to worksheet: https://meritbadge.org/wiki/images/7/7a/Space_Exploration.pdf

Scouts should complete the following requirements (in blue below) and bring their completed work with them to camp. Requirement 2.0, 3.0, 5b or 5c, and 7. In order to earn the merit badge at camp it is critical that requirement 3.0 is completed in advance. Don't forget to bring your rocket and launcher to camp.

Depending on the weather, consider bringing: long sleeved shirt, long pants, socks, shoes or boots, jacket, hat and gloves, sun screen, and bug spray.

The course is limited to 30 participants.

Merit Badge Requirements

1. Tell the purpose of space exploration and include the following:

- a. Historical reasons
- b. Immediate goals in terms of specific knowledge
- c. Benefits related to Earth resources, technology, and new products.
- d. International relations and cooperation

2.0 At home design a collector's card, with a picture on the front and information on the back, about your favorite space pioneer.

2.1 Share your card and discuss four other space pioneers with your counselor.

3.0 Build a model rocket (complete this task at home)

3.1 Launch and recover a model rocket. Make a second launch to accomplish a specific objective. (Rocket must be built to meet the safety code of the National Association of Rocketry. See the "Model Rocketry" chapter of the Space Exploration merit badge pamphlet.) Identify and explain the following rocket parts:

- a. Body tube
- b. Engine mount
- c. Fins
- d. Igniter
- e. Launch lug
- f. Nose cone
- g. Payload
- h. Recovery system
- i. Rocket engine

4. Discuss and demonstrate each of the following:

- a. The law of action-reaction.
- b. How rocket engines work
- c. How satellites stay in orbit
- d. How satellite pictures of Earth and pictures of other planets are made and transmitted.

5. Do TWO of the following:

- a. Discuss with your counselor a robotic space exploration mission and a historic crewed mission. Tell about each mission's major discoveries, its importance, and what was learned from it about the planets, moons, or regions of space explored.
- b. Using magazine photographs, news clippings, and electronic articles (such as from the Internet), make a scrapbook about a current planetary mission, ***Bring your scrapbook to camp to share with others.***
- c. Design a robotic mission to another planet or moon that will return samples of its surface to Earth. Name the planet or moon your spacecraft will visit. Show how your design will cope with the conditions of the planet's or moon's environment. ***Bring your design to camp to share with others.***

6. Describe the purpose and operation of ONE of the following:

- a. Space shuttle or any other crewed orbital vehicle, whether government owned (U.S. or foreign) or commercial
- b. International Space Station

7. Design an inhabited base located within our solar system, such as Titan, asteroids, or other locations that humans might want to explore in person. Make drawings or a model of your base. In your design, consider and plan for the following:

- a. Source of energy
- b. How it will be constructed
- c. Life-support system
- d. Purpose and function

Bring your drawing or model to camp to share with others.

8. Discuss with your counselor two possible careers in space exploration that interest you. Find out the qualifications, education, and preparation required and discuss the major responsibilities of those positions.