

Space Exploration Merit Badge at Turner Farm

Welcome to the Space Exploration Merit Badge program Turner Farm Park. The program is held in the Turner Farm roll-top roof-top classroom at 925 Springvale Road, Great Falls, VA 22066.

Important general Merit Badge information for parents: Be sure that you are familiar with the requirements for the merit badge your scout has selected. Some badges may take considerable time and planning to complete and may not be appropriate for younger scouts. Blue cards must be signed by your Troop Leader prior to attending the merit badge class. Park staff will not sign off on any blue cards missing this signature.

Most merit badges are not designed to be completed in a single session with an instructor, so it is not always possible to walk away with a completed and signed blue card at the end of a program. Every badge requires some independent work by your scout.

FCPA-Turner Farm will provide staff, meeting BSA Youth Protection guidelines for male and female scouts, and supervision ratios. Parent/guardian **MUST** sign-in, and sign-out each participant(s) from the class. If you provided your own transportation, you may sign-in and sign-out yourself from the class. There is no fee if adults wish to stay during the class.

Below is the recommended homework to be completed before the program: There are some useful links at the end of some questions; however, scouts are encouraged to find their own sources (library, internet etc.). Please note that internet links change often, and the recommended links may not work.

Merit badge worksheets may be downloaded from meritbadge.org and brought to class. These worksheets help scouts organize their homework and classwork.

If the pre work is not completed beforehand you will only receive a partial completion of the badge and will need to arrange to return at a later date to get your blue card signed.

2. Design a collector's card, with a picture on the front and information on the back, about your favorite space pioneer. Share your card and discuss four other space pioneers with your counselor.

3. Build, 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

5a. 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.

5c. 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.

We will do the following during the course:

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

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

6. Describe the purpose, operation, and components 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 a living-habitat 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:

- Source of energy
- How it will be constructed
- Life-support system

- Purpose and function

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.

What to bring to the program:

- Bring your completed homework. It is OK if you cannot complete the homework before class. You can bring completed homework in at a later date for sign-off.
- Come prepared to discuss and present your homework. As we move from one topic to the next during class, scouts will be asked to present homework elements completed. It will be more important to prove that you have understood a requirement orally rather than just presenting written information.
- Bring your blue card signed off by your Troop Leader. (Turner Farm does not have blue cards.)
- Bring/wear weather appropriate clothing/outerwear. We will not go outdoors in heavy rain or thunderstorms. Boy Scout uniform not required.
- Bring a pencil and pen.
- Bring a flashlight if the program is held after dusk.
- Download the merit badge worksheets from meritbadge.com and bring these worksheets to class.
- Bring a water to drink.

Work completed after the program:

During the program, the merit badge counselor will do a demonstration or explain the process for completing the final merit badge requirements. Your scout must provide evidence of completion in order to obtain blue card sign-off. Digital photographs of your scout doing the element and a picture of the completed requirement will be sufficient evidence, unless otherwise stated.

If your scout needs blue card sign-off after the class date, please call 703-324-2820 or email sebastian.arnez@fairfaxcounty.gov to arrange a time to meet with a merit badge counselor.

We're looking forward to working with your scout.

Turner Farm Park

703-324-2820

sebastian.arnez@fairfaxcounty.gov

925 Springvale Road

Great Falls, VA 22066

<https://www.fairfaxcounty.gov/parks/turnerfarm>