

Astronomy Merit Badge at Turner Farm

Welcome to the Astronomy 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.

1a. Explain to your counselor the most likely hazards you may encounter while participating in astronomy activities, and what you should do to anticipate, help prevent, mitigate, and respond to these hazards.

1b. Explain first aid for injuries or illnesses such as heat and cold reactions, dehydration, bites and stings, and damage to your eyes that could occur during observation.

1c. Describe the proper clothing and other precautions for safely making observations at night and in cold weather.

4c. Make two sketches of the Big Dipper. In one sketch, show the Big Dipper's orientation in the early evening sky. In another sketch, show its position several hours later. In both sketches, show the North Star and the horizon. Record the date and time each sketch was made.

5b. Using the Internet (with your parent's permission) and other resources, find out when each of the five most visible planets that you identified in requirement 5a will be observable in the

evening sky during the next 12 months, then compile this information in the form of a chart or table.

6a. Sketch the face of the Moon and indicate at least five seas and five craters. Label these landmarks.

6b. Sketch the phase and the daily position of the Moon, at the same hour and place, for four days in a row. Include landmarks on the horizon such as hills, trees, and buildings. Explain the changes you observe.

7a. Describe the composition of the Sun, its relationship to other stars, and some effects of its radiation on Earth's weather and communications.

7b. Define sunspots and describe some of the effects they may have on solar radiation.

7c. Identify at least one red star, one blue star, and one yellow star (other than the Sun). Explain the meaning of these colors.

9. Find out about three career opportunities in astronomy. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor and explain why this profession might interest you.

We will do the following during the course:

1d. Explain how to safely observe the Sun, objects near the Sun and solar eclipses.

2. Explain what light pollution is and how it and air pollution affect astronomy.

3a. Explain why binoculars and telescopes are important astronomical tools. Demonstrate or explain how these tools are used.

3b. Describe the similarities and differences of several types of astronomical telescopes, including at least one that observes light beyond the visible part of the spectrum (i.e., radio, X-ray, ultraviolet, or infrared).

3c. Explain the purposes of at least three instruments used with astronomical telescopes.

3d. Describe the proper care and storage of telescopes and binoculars both at home and in the field.

4a. Identify in the sky at least 10 constellations, at least four of which are in the zodiac.

4b. Identify in the sky at least eight conspicuous stars, five of which are of magnitude 1 or brighter.

4d. Explain what we see when we look at the Milky Way.

5a. List the names of the five most visible planets. Explain which ones can appear in phases similar to lunar phases and which ones cannot and explain why.

5c. Describe the motion of the planets across the sky.

5d. Observe a planet and describe what you saw.

6c. List the factors that keep the Moon in orbit around Earth.

6d. With the aid of diagrams, explain the relative positions of the Sun, Earth, and the Moon at the times of lunar and solar eclipses, and at the times of new, first-quarter, full, and last-quarter phases of the Moon.

8a. Visit a planetarium or astronomical observatory. Submit a written report, a scrapbook, or a video presentation afterward to your counselor that includes the following information:

- Activities occurring there.
- Exhibits and displays you saw.
- Telescopes and other instruments being used.
- Celestial objects you observed.

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 at 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>