ASTRONOMY MERIT BADGE
at Cub Run RECenter

The Astronomy Merit Badge program is **4 hours long**, but is weather dependent. We might not be able to complete all the requirements if it is cloudy. Scouts should bring a snack and be prepared to go outside to observe the night sky. In the winter, it gets cold outside staring at the sky, so please dress for the weather.

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SCOUTS - Please bring to class:

- Prework – see below (if scouts are unable to finish prework, they will receive partial signatures on their blue card and must come back for final signatures when the work is complete.)
- Blue card, pencil and clipboard
- Snack/drink
- Appropriate clothing to go outside to observe the night sky

PREWORK – Scouts must do some requirements on their own. **PLEASE READ THE REQUIREMENTS CAREFULLY!** The sky must be watched over a fair amount of time – you must be prepared to make observations during the course of an evening (#4c. Big Dipper) and over 4 days (#6. Moon). Make sure to add LANDSCAPES!!

The requirement choices under #8 can also be time consuming. We are lucky to have the NASA Udvar-Hazy Museum nearby in Chantilly. Some IMAX shows can substitute for a planetarium program. (You can check with me if you are unsure which ones.)

If for some reason you cannot complete these prior to the class at Cub Run, I will sign a partial Blue Card. If you need more guidance, please contact me. I will help in any way possible through the process.

Note: when prework states "explain", you must also write an explanation of the observation.

ASTRONOMY MERIT BADGE REQUIREMENTS PREWORK

Scouts should read the merit badge pamphlet/booklet prior to class

4) Do the following:

a) **Identify in the sky at least 10 constellations, at least four of which are in the zodiac. (You may wish to do this at home – we will go over this is class, but night skies are not dependable due to cloud cover, rain, etc.)

c)**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.
(Scouts often make a mistake here – the Big Dipper moves over the course of the evening – and changes direction – scouts must record the movement correctly – making sure to include the horizon

in their sketch. I will reject drawings with no landscape features and no north star and no time record. It is best to do one drawing, and add the constellations at different times)

6) Do the following:

(e) **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 (in writing).

(Scouts often make a mistake here – scouts should show a slight change in the moon phase, but a significant change in where the moon is relative to the landmarks on the horizon. It is easiest to draw one landscape picture, then add the moon at which should be in different positions on the 4 nights) Explain the changes you observe.

8) **With your counselor's approval and guidance, do ONE of the following:

(a)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:

i) Activities occurring there
ii) Exhibits and displays you saw
iii) Telescopes and instruments being used
iv) Celestial objects you observed.

(b) Plan and participate in a three-hour observation session that includes using binoculars or a telescope. List the celestial objects you want to observe, and find each on a star chart or in a guidebook. Prepare an observing log or notebook. Show your plan, charts, and log or notebook to your counselor before making your observations. Review your log or notebook with your counselor afterward.

(c) Plan and host a star party for your Scout troop or other group such as your class at school. Use binoculars or a telescope to show and explain celestial objects to the group.

(d) Help an astronomy club in your community hold a star party that is open to the public.

(e) Personally take a series of photographs or digital images of the movement of the Moon, a planet, an asteroid , meteor, or a comet. In your visual display, label each image and include the date and time it was taken. Show all positions on a star chart or map. Show your display at school or at a troop meeting. Explain the changes you observed.