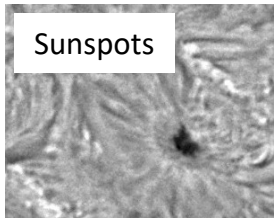
SPACE CAMP ADVANCED

Grades 6th -8th



Space Camp Advanced is designed to teach the importance of data gathering and computer processing in the sciences. The students will use their smartphones to collect data and use computer programs (provided) to process the collected information. Space Camp is taught by Kevin Cobble owner of Z-Field Observatory in Princeton.

Note: Students will need to bring their smartphones and, if possible, a laptop computer.

Previous completion of Space Camp Senior is recommended but not required.

Smartphone on telescope

Smartphone Microscope

Observatory Telescope

Section 1: Photography through a Telescope Why are instruments important in the sciences? Learn why cameras have replaced the human eye for collecting information in astronomy. **Activities: Build an adapter for your smartphone to be used to take pictures through a telescope. Take pictures of the Sun and process them on a computer to make them better. Build a smartphone adapter for a telescope. Use your smartphone to take pictures of the Sun.**

Section 2: Night Observing The class will meet in the evening (8pm-10pm). Use your smartphone to take pictures of the Moon. **Activities: Learn how to point the telescope and how to take long exposures. Process the images to make them better. You will also take images of an area of the sky that contains an asteroid for use on Wednesday. Imaging through a telescope using the student's smartphone.**

Section 3: Track an Asteroid. Lean about asteroids, and orbits in astronomy. Use the images taken the night before to find an asteroid in the image. **Activities: Find the location of the asteroid as it moves during the night. Use that information to find the orbit of the asteroid. Learn how to use scientific computer tools to measure asteroids in a photograph. Find the asteroid in the pictures and compute its orbit.**

Section 4: Catch a Falling Star. The earth is bombarded by thousands of objects from space everyday. The majority burn up in the atmosphere. When they do they break down into small spheres called micrometeorites. These float down to the surface of the earth. **Activities: We will collect soil samples from around the area and try to find these micrometeorites using a microscope you will build using your smartphone. Build a microscope from your smartphone. Find and separate out micrometeorites from samples you will collect from around the area (your homes, schools, etc.) You may find a micrometeorite and have a piece of an asteroid!**

Section 5: Field Trip. Visit Z-Field Observatory use the observatory telescope to take pictures of the Moon and planets using your camera as well as the cameras at the observatory. Photograph the moon, planets, stars and other objects in the night sky.