LUNAR AND PLANETARY INSTITUTE

Camps' Guide to Lunar Eclipses:
September 27/28, 2015

lunar eclipse

What is a lunar eclipse?

Every month, the Moon makes one trip, or orbit, around Earth. The Moon's orbit around Earth is titled ever so slightly (~5°), so, for example, from the Sun's perspective, the Moon usually passes a little above or below Earth as it orbits around Earth. Occasionally, the Moon reaches a position where it is in a straight line with Earth and the Sun. When this happens, eclipses occur. A lunar eclipse happens when Earth is directly between the Moon and the Sun. Conversely, a solar eclipse happens when the Moon is directly between the Sun and Earth. There are at least four eclipses each year. A total lunar eclipse will be visible from most of North America on September 27 & 28, 2015. To see what time the eclipse will be visible from your location, enter your city at http://www.timeanddate.com/eclipse/in/usa.

During a total lunar eclipse, the Moon turns a reddish-orange color. Why? During a total lunar eclipse, Earth blocks the Sun's light from reaching the Moon. While the Moon remains completely within Earth's shadow, some sunlight still manages to reach the Moon. Light reaches the Moon because it is "bent" as it encounters the Earth's atmosphere. As the sunlight (which is made of all the colors of the rainbow) passes through the Earth's atmosphere, most of the blue colored light stays in the atmosphere. The remaining light that makes it to the Moon is a deep red or orange in color and is much dimmer than pure white sunlight.

Upcoming Events

Find information and resources about upcoming celestial events and NASA mission milestones to share with your students at http://www.lpi.usra.edu/education/look_up.

Lunar Eclipses in Your Camp!

Use the resources below to enable your campers to explore lunar eclipses. Create a lunar eclipse program that fits your camp schedule and needs. Consider fitting lunar eclipses into your ongoing programming. Perhaps design a week-long investigation into lunar eclipses with hands-on activities, demonstrations, and video clips, presentations by scientists from local colleges or universities, and a culminating lunar eclipse viewing event. Alternatively, pick one activity for your campers to celebrate the lunar eclipse and then encourage them to follow the news and explore more on their own!

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Lunar Eclipse Viewing

Consider holding an eclipse viewing at your camp! Ask your local astronomical society to bring their telescopes for a viewing. Use the links below to locate a local astronomy club and/or speaker.

Night Sky Network
http://nightsky.jpl.nasa.gov/clubs-and-events.cfm
The Night Sky Network is a nationwide coalition of amateur astronomy clubs bringing the science, technology, and inspiration of NASA's missions to the general public.

NASA/JPL Solar System Ambassadors
http://www2.jpl.nasa.gov/ambassador/directory.htm
Solar System Ambassadors is a nationwide program consisting of volunteers who communicate the excitement of NASA/JPL's space exploration missions and information about recent discoveries to people in their local communities.

Websites

September 27/28, 2015 Total Lunar Eclipse
http://www.timeanddate.com/eclipse/lunar/2015-september-28

Lunar Eclipses for Beginners
http://www.mreclipse.com/Special/LEprimer.html

Lunar Eclipse Pics from Mr. Eclipse
http://www.mreclipse.com/MrEclipse.html#Moon

Lunar Eclipse Visualization: Shadow View
https://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=4340

Lunar Eclipse Visualization: View from the Moon
https://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=4341

Explore lunar eclipses in your classroom with hands-on activities!

Moon Phases and Eclipses
http://cosmictimes.gsfc.nasa.gov/teachers/downloads/lessons/1919/eclipse.pdf
Grade Level(s): Middle School
Using a foam ball and a lamp, learners create a solar eclipse, a lunar eclipse, and learn more about why the Moon appears differently from one night to the next. MS-ESS1-1 (Middle School); Developing and Using Models; Patterns

This and other NASA educational activities, can be found at http://nasawavelength.org.