

Constellation Station LLC available Starry Night™ Programs

Primary School:

Night & Day

- Key Concepts
 - Earth's rotation defines day and night
 - Earth's daily rotation causes Sun, Moon, planets and stars to appear to move in the sky. (Diurnal Motion)
 - Daytime in one place can be nighttime in another

Moon Phases

- Key Concepts
 - The Moon orbits the earth once every 4 weeks
 - The Moon shines by reflected sunlight
 - The phases of the Moon are caused by its orbital motion around the Earth

Location, Location, Location! Using stars to find your way

- Key Concepts
 - People all over the world recognize star patterns and give them names
 - The Big Dipper can help you find Polaris/North
 - Different Constellations can be seen at different times of the year
 - The circumpolar stars can be seen in the sky all year

Constellations & Star Lore

- Key Concepts
 - People all over the world recognize star patterns and give them names
 - quick Greek overview
 - Aries, Orion stars & Myth, Scorpius, Sagitarius, Draco and Northern Circumpolar constellations
- **Any preference in specific myths/lore can be added in**

Secondary School:

A Change of Season

- Key Concepts
 - Earth's revolution around the sun defines the year
 - The tilt of Earth's rotational axis governs the seasons
 - Tracing the position of the sun each day at midday for a year from same location traces a figure 8 called the analemma
 - Horizon, Zenith & Meridian

Solar & Lunar Eclipses

- Key Concepts
 - Lunar eclipse occurs when Moon passes through the Earth's shadow. Can only happen when full moon is opposite the sun seen from Earth.
 - Solar Eclipse is Moon blocking the light of the sun and casting a small shadow on Earth. Solar eclipses can only occur during a New Moon.
 - Not all eclipses are total.

Overview of the Solar System

-Key Concepts

- The solar system is made of Sun, Earth, Moon and other 7 major planets and their moons as well as smaller objects like asteroids, comets, meteoroids, dust and small bodies like Pluto
- The Sun is the central and largest body in system
- The major planets orbit the sun in a nearly flat plane

The Planets

-Key Concepts

Same as Overview of Solar System above but with focus on all planets

Motions of the Planets

-Key Concepts

- The Earth and all planets revolve around the Sun
- A planet's retrograde motion as seen from Earth is the result of Earth's motion
- The heliocentric model greatly simplified things by proposing a single center about which all major solar system objects revolve

Meteors, Asteroids & Comets

-Key Concepts

- Asteroids are small, irregular solar system bodies made mostly of rock and metal
- Comets are mostly made of ice, rock & dust
- Meteor showers are caused when Earth moves through debris trails left behind by comets

Advanced Lessons:

Seasonal Constellations

- Key Concepts
 - Different constellations can be seen at different times of the year
 - The circumpolar stars can be seen in the sky every night, all year long
 - The zodiac is a band of constellations along the ecliptic

Properties and Life Cycles of Stars

- Key Concepts
 - A star's energy is generated by nuclear fusion
 - The inverse-square law relates a star's distance, apparent brightness and luminosity
 - Stars have a life cycle that depends on the initial mass of the star

The Milky Way Galaxy

- Key Concepts
 - Like other galaxies, the Milky Way is a collection of stars, dust and gas
 - The Sun is located 26,000 light years from the center of our galaxy
 - From Earth, we view the Milky Way from the inside out