

California
High School

Starry Night Lesson Plans
In order of relevance

Grades 9, 10, 11

STANDARD SET 1. Earth’s Place in the Universe (Solar System) Earth Sciences

1. Astronomy and planetary exploration reveal the solar system’s structure, scale, and change over time. As a basis for understanding this concept:

1. a. Students know how the differences and similarities among the Sun, the terrestrial planets, and the gas planets may have been established during the formation of the solar system.	B1	C1	F3
1. b. Students know the evidence from Earth and Moon rocks indicates that the solar system was formed from a nebular cloud of dust and gas approximately 4.6 billion years ago.	F3		
1. d. Students know the evidence indicating that the planets are much closer to Earth than the stars are.	B2	G1	
1. e. Students know the Sun is a typical star and is powered by nuclear reactions, primarily the fusion of hydrogen to form helium.	F1	G2	
1. f. Students know the evidence for the dramatic effects that asteroid impacts have had in shaping the surface of planets and their moons and in mass extinctions of life on Earth.	D3	C1	C3
1. g.* Students know the evidence for the existence of planets orbiting other stars.	B1		

STANDARD SET 2. Earth’s Place in the Universe (Stars, Galaxies, and the Universe)

2. Earth-based and space-based astronomy reveal the structure, scale, and changes in stars, galaxies, and the universe over time. As a basis for understanding this concept:

2. a. Students know the solar system is located in an outer edge of the discshaped Milky Way galaxy, which spans 100,000 light years.	H1	H2	I3
2. b. Students know galaxies are made of billions of stars and comprise most of the visible mass of the universe.	H1	H2	I3
2. c. Students know the evidence indicating that all elements with an atomic number greater than that of lithium have been formed by nuclear fusion in stars.	G2		
2. d. Students know that stars differ in their life cycles and that visual, radio, and X-ray telescopes may be used to collect data that reveal those differences.	G2	I3	G3
2. f. * Students know the evidence indicating that the color, brightness, and evolution of a star are determined by a balance between gravitational collapse and nuclear fusion.	F3	G2	G3
2. g.* Students know how the red-shift from distant galaxies and the cosmic background radiation provide evidence for the “big bang” model that suggests that the universe has been expanding for 10 to 20 billion years.	H3	H2	I3