

U. S. Curriculum Correlations by State

Utah

Earth Systems Science

Starry Night Lesson Plans *In order of relevance*

Standard I: Students will understand the scientific evidence that supports theories that explain how the Universe and Solar System developed.

Objective 1: Describe the Big Bang Theory and evidence supporting it.

- a. Determine the motion of a star relative to Earth based on a red or blue shift in the wavelength of light from the star.
- b. Explain how evidence of red and blue shifts is used to determine whether the Universe is expanding or contracting.
- c. Describe the Big Bang Theory and the red shift evidence that supports this theory.
- d. Investigate and report how science has changed the accepted ideas regarding the nature of the Universe throughout history.
- e. Provide an example of how technology has helped scientists investigate the Universe.

H3 H2 H1 I1 I2 F2

I1

Objective 2: Relate the structure and composition of the Solar System to the processes that exist in the Universe.

- a. Compare the elements formed in the big bang (hydrogen, helium) with elements formed through nuclear fusion in stars.
- b. Relate the life cycle of stars of various masses to the relative mass of elements produced
- c. Explain the origin of heavy elements on Earth (i.e., heavy elements were formed by fusion in ancient stars)
- d. Present evidence that the process that formed Earth's heavy elements continues in stars today
- e. Compare the life cycle of the Sun to the life cycle of other stars
- f. Relate the structure of the Solar System to the forces acting upon it

F3 B1 G2 H2 H3 B1 F1

G2 H3 H2 F1

G2

F3 H1

G2

G2

F3 B1 H1

Standard II: Students will understand that the features of Earth's evolving environment affect living systems, and that life on Earth is unique in the Solar System.

Objective 1: Describe the unique physical features of Earth's environment that make life on Earth possible.

- a. Compare Earth's atmosphere, solar energy, and water to those of other planets and moons in the Solar System
- b. Compare the conditions that currently support life on Earth to the conditions that exist on other planets in the Solar System
- c. Evaluate evidence for existence of life in other star systems, planets, or moons, either now or in the past

C1 F1 C3 G1 G2

C1 C3 F1

C2 F1

C1 C3 G2 G1 F1