04 - Galaxies, the Fate of the Universe and Astrobiology

Content Area: Science
Course(s): Astronomy
Time Period: Semester 1
Length: 3 weeks
Status: Published

Standards

Stability and Change

Cause and Effect

Stability and Change

Energy and Matter

Asking Questions and Defining Problems

Scale, Proportion, and Quantity

Obtaining, Evaluating, and Communicating Information

SCI.HS-ESS1 Earth's Place in the Universe

SCI.HS-ESS1-2 Construct an explanation of the Big Bang theory based on astronomical evidence of light

spectra, motion of distant galaxies, and composition of matter in the universe.

SCI.HS.ESS1.A The Universe and Its Stars

SCI.HS-ESS1-3 Communicate scientific ideas about the way stars, over their life cycle, produce elements.

Engaging in Argument from Evidence

Enduring Understanding

- Water is not rare in space; liquid water is rare.
- Millions to billions of solar systems exist.
- The Big Bang was the source of all matter in the universe

Essential Questions

- 1. Are we alone in the universe? How do we know?
- 2. What are the possible futures of the universe?
- 3. How big is the observable universe?

4. Where are we located in the solar system, galaxy and universe?

Knowledge and Skills

Knowledge:

- Radioactive age/dating in space
- Size of the observable universe
- Knowledge of how the universe is expanding
- Doppler Effect
- Water in space
- Volcanism in space
- Astrobiology: Drakes equation, Miller experiment

Skills:

- Make comparisons of Earth and our Sun to various objects in the universe
- Diagram the life cycle of the universe (from the big bang to the fate of the universe)
- Explain how galaxies form
- Interpret data to determine how astronomers know about the expansion of the universe
- Evaluate evidence to determine the validity of life on other planets

Assessments

https://docs.google.com/document/d/1wR7bQF-8AQoRrt0g4C3hKja0yjwDjC9_BiAmONWbTcl/edit?usp=sharing

Modifications

https://docs.google.com/document/d/1ODqaPP69YkcFiyG72fIT8XsUIe3K1VSG7nxuc4CpCec/edit?usp=sharing