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
HS-ESS1	Earth's Place in the Universe
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.
ESS1.A	The Universe and Its Stars
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_BiAmONWbTcI/edit?usp=sharing

Modifications

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