

STAGE 1 - Desired Results
(What do we want student to know and be able to do?)

Established Goals: Grade Level Expectation

Physical Science 1.2: Matter has definite structure that determines characteristic physical and chemical properties.

Physical Science 1.3: Matter can change form through chemical or nuclear reactions abiding by the laws of conservation of mass and energy.

Life Science 2.3: Cellular metabolic activities are carried out by biomolecules produced by organisms.

Earth Systems Science 3.1: The history of the universe, solar system and Earth can be inferred from evidence left from past events.

Earth Systems Science 3.2: As part of the solar system, Earth interacts with various extraterrestrial forces and energies such as gravity, solar phenomenon, electromagnetic radiation, and impact events that influence the planet's geosphere, atmosphere, and biosphere in a variety of ways.

Students will understand that ...

- Earth exchanges mass and energy with the rest of the solar system.
- Matter exists in many forms and has unique properties.
- Living organisms are constructed of carbon-based macromolecules.

Essential Questions:

- How do we know the age of the Sun, Earth, and universe?
- How do we determine the properties of stars using spectra data?
- How is the Periodic Table arranged and what patterns are present?
- How are the heavier elements of the Periodic Table created and how are they used?
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Students will know ...

Suggested topical/factual knowledge and information to support the student in reaching mastery of the skill.

- The life cycle of stars (stellar evolution) as it applies to the H-R diagram.
- How the H-R diagram is organized.
- The size, location, charge, and scale of subatomic particles.
- How specific elements are used in the

Students will be able to ...

The Evidence Outcomes and Nature Of listed below are the indication that a student is meeting an expectation at the mastery level and are required by the state.

- Examine, evaluate, question and ethically use information from a variety of sources and media to investigate the history of the universe, solar system, and Earth. (3.1.e) (DOK 1-2)
- Use the H-R diagram to identify stars based

<p>human body and in what amounts.</p> <p>Need to know vocabulary: Students must have working and transferable knowledge of these words:</p> <ul style="list-style-type: none"> • atom • element • physiology • solar system • star • globular cluster • proton • neutron • electron 	<p>on luminosity & heat. (3.2.b) (DOK 1-2)</p> <ul style="list-style-type: none"> • Explain that nuclear fusion involves small atoms being joined together and releasing energy. (3.2.c, 1.5.c) (DOK 2-3) • Classify and separate substances based on properties (1.2.d) (DOK 1-2) • Use an inquiry approach to test predictions about chemical reactions. (1.3 Nature of Science) (DOK 1-4)
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**STAGE 2 - Assessment Evidence
(How do we know when they know it?)**

<p>Performance Tasks:</p> <ul style="list-style-type: none"> • Timelines • Brain Pop quiz • Common assessments • Labs 	<p>Other Evidence:</p> <ul style="list-style-type: none"> • Interactive notebook • Worksheets • Formative Evaluations • Summative assessments
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STAGE 3 - Learning Plan

<p>Learning Activities:</p> <p>Day One</p> <p><i>Learning Target: Students will be able to describe, explain, and name the potential stages of the life cycle of stars based on mass.</i></p> <ol style="list-style-type: none"> 1. Review <ol style="list-style-type: none"> a. stellar life cycle b. elemental components of the sun c. elemental components of the human body 2. Stellar life cycle 3. Power Point – Carl Sagan

Day Two

Learning Target: Students will be able to compare and contrast the chemical composition of the sun to other stars.

1. Continue Power Point
2. Compare elements between stars
3. Determine elements among planets

Day Three

Learning Target: Students will be able to list the main chemical components of the human body and compare and contrast these to our sun.

1. Continue Power Point
2. Determine elemental make-up of the human body

(Ubd template McTighe and Wiggins)