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| Week | Topics | Standards | Activities/Assessments |
| 1 | * Introduction
* Safe Experiments
* Ethical Behavior
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| N.12.A.4 | Students know how to safely conduct an original scientific investigation using the appropriate tools and technology. E/L |
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| N.12.B.1 | Students know science, technology, and society influenced one another in both positive and negative ways. E/S |
| N.12.B.3 | Students know the influence of ethics on scientific enterprise. E/S |
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 | * Team Building Challenge (Tower: 5 straws, 5 paperclips)
* Video: The Future: Body Questions
 |
| 2, 3, 4 | * Scientific Method
* Process Skills
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| N.12.A.1 | Students know tables, charts, illustrations and graphs can be used in making arguments and claims in oral and written presentations. E/S |
|
| N.12.A.2 | Students know scientists maintain a permanent record of procedures, data, analyses, decisions, and understandings of scientific investigations. I/S |
| N.12.A.3 | Students know repeated experimentation allows for statistical analysis and unbiased conclusions. E/S |
| N.12.A.4 | Students know how to safely conduct an original scientific investigation using the appropriate tools and technology. E/L |
|
| N.12.A.5 | Students know models and modeling can be used to identify and predict cause-effect relationships. I/S |

 | * Alice in Wonderland Investigations
	+ Parachute Experiment
	+ Sugar Dissolving Experiment
	+ Bean Sprout Growth Experiment
* Quiz
 |
| 5 | * Measurement and Process Skills
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| N.12.A.4 | Students know how to safely conduct an original scientific investigation using the appropriate tools and technology. E/L |
|
| N.12.A.5 | Students know models and modeling can be used to identify and predict cause-effect relationships. I/S |

 | * Measuring Volume Gizmo (Online Interactive Simulation)Students will:
* Find the volume of water in a graduated cylinder by observing the bottom of the meniscus in relation to tick marks
* Add a specific volume of water to a graduated cylinder using a beaker and a pipette
* Measure and calculate the volume of regular solids using a ruler and calculator
* Measure the volume of regular and irregular solids based on water displacement
* Answer questions based on these activities
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| 6 | * Introduction to Earth’s Composition and Structure
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| E.12.C.2 | Students understand the concept of plate tectonics including the evidence that supports it (structural, geophysical and paleontological evidence). E/S |

 | * Inside Planet Earth VideoDiscussion and questions
 |
| 7 | * Earth’s Composition and Structure
* Plate Tectonics
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| E.12.C.2 | Students understand the concept of plate tectonics including the evidence that supports it (structural, geophysical and paleontological evidence). E/S |

 | * Layers of the Earth Rap (YouTube Video)
* Draw Earth layer diagram
* Plate Tectonics PowerPoint and notes
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| 8 | * Plate Tectonics
* Seafloor Spreading
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| E.12.C.2 | Students understand the concept of plate tectonics including the evidence that supports it (structural, geophysical and paleontological evidence). E/S |

 | * Plate Tectonics PowerPoint and notes
* Pangaea Puzzle (based on landforms, fossil and glacial evidence)
* Student models of seafloor spreading with movable rock layers
* Seafloor Spreading PowerPoint and notes
* Seafloor Spreading Quiz
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| 9 | * Plate Tectonics
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| E.12.C.2 | Students understand the concept of plate tectonics including the evidence that supports it (structural, geophysical and paleontological evidence). E/S |
| E.12.C.1 | Students know how successive rock strata and fossils can be used to confirm the age, history, and changing life forms of the Earth, including how this evidence is affected by the folding, breaking, and uplifting of layers. E/S |
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 | * How the Rocky Mountains Were Formed videoDiscussion and Questions
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| 10 | * Volcanoes
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| E.12.C.2 | Students understand the concept of plate tectonics including the evidence that supports it (structural, geophysical and paleontological evidence). E/S |
| E.12.C.1 | Students know how successive rock strata and fossils can be used to confirm the age, history, and changing life forms of the Earth, including how this evidence is affected by the folding, breaking, and uplifting of layers. E/S |
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 | * Supervolcano VideoDiscussion and questions
* Volcano PowerPointDiscussion and notes
* Quiz
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| 11 | * Plate Tectonics Review and Assessment
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| E.12.C.2 | Students understand the concept of plate tectonics including the evidence that supports it (structural, geophysical and paleontological evidence). E/S |
| E.12.C.1 | Students know how successive rock strata and fossils can be used to confirm the age, history, and changing life forms of the Earth, including how this evidence is affected by the folding, breaking, and uplifting of layers. E/S |
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 | * Eggshell Earth Activity
* Plate Tectonics Article and questions
* Jeopardy Review
* Plate Tectonics Unit Test
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| 12 | * HSPE Testing Week
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| E.12.C.2 | Students understand the concept of plate tectonics including the evidence that supports it (structural, geophysical and paleontological evidence). E/S |
| E.12.C.1 | Students know how successive rock strata and fossils can be used to confirm the age, history, and changing life forms of the Earth, including how this evidence is affected by the folding, breaking, and uplifting of layers. E/S |
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 | * Ring of Fire VideoDiscussion and Questions
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| 13 | * Make-up Work
 |  | * Reteach, review, make-up missing work, retest
 |
| 14 | * Earthquakes
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| E.12.C.2 | Students understand the concept of plate tectonics including the evidence that supports it (structural, geophysical and paleontological evidence). E/S |

 | * Earthquake MapDiscussion and questions
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| 15 | * Earthquakes
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| E.12.C.2 | Students understand the concept of plate tectonics including the evidence that supports it (structural, geophysical and paleontological evidence). E/S |

 | * Videos of earthquakes in Los Angeles, JapanDiscussion
 |
| 16 | * Earthquakes
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| E.12.C.2 | Students understand the concept of plate tectonics including the evidence that supports it (structural, geophysical and paleontological evidence). E/S |

 | * San Andreas Fault video, discussion and questions
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| 17 | * Earthquakes
	+ P-Waves
	+ S-Waves
	+ Reading Seismogram
	+ Shadow zones
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| E.12.C.2 | Students understand the concept of plate tectonics including the evidence that supports it (structural, geophysical and paleontological evidence). E/S |

 | * How to use earthquake time/travel graphs
* Locate a Quake activity using P-wave and S-wave travel times
 |
| 18 | * Unit review and assessment
 |  | * Earthquake Unit test
* Dante’s Peak video
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| 19 | * 2nd Semester Rules
* Start HSPE Review
 |  | * HSPE pre-assessment
* Discussion
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| 20 | * History of the Earth
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| E.12.C.1 | Students know how successive rock strata and fossils can be used to confirm the age, history, and changing life forms of the Earth, including how this evidence is affected by the folding, breaking, and uplifting of layers. E/S |
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| E.12.A.2 | Students know the composition of Earth’s atmosphere has changed in the past and is changing today. I/S |

 | * Fearless Planet Video: Earth StoryDiscussion and questions
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| 21 | * Geological Time
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| E.12.C.1 | Students know how successive rock strata and fossils can be used to confirm the age, history, and changing life forms of the Earth, including how this evidence is affected by the folding, breaking, and uplifting of layers. E/S |
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 | * Earth’s History PowerPoint and notes
* Geologic Time Line Activity (4.5 meter paper tape with eons, eras, periods and epochs plus major milestones in evolution)
 |
| 22 | * Relative Dating
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| E.12.C.1 | Students know how successive rock strata and fossils can be used to confirm the age, history, and changing life forms of the Earth, including how this evidence is affected by the folding, breaking, and uplifting of layers. E/S |
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 | * Article and questions
* Fossil Casting Activity
* Earth’s History PowerPoint and notes
 |
| 23 | * Fossils
* Earth’s History Unit Review and Assessment
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| E.12.C.1 | Students know how successive rock strata and fossils can be used to confirm the age, history, and changing life forms of the Earth, including how this evidence is affected by the folding, breaking, and uplifting of layers. E/S |
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 | * Earth’s History PowerPoint and notes
* Article on Geological Time with questions
* Unit review
* Earth History quiz
 |
| 24 | * Chemistry Basics
	+ The Periodic Table
	+ Bonds
	+ Atomic Structure
 |

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| P.12.A.1 | Students know different molecular arrangements and motions account for the different physical properties of solids, liquids, and gases. E/S |
|
| P.12.A.2 | Students know elements in the periodic table are arranged into groups and periods by repeating patterns and relationships. E/S |
| P.12.A.4 | Students know atoms bond with one another by transferring or sharing electrons. E/S |
| P.12.A.5 | Students know chemical reactions can take place at different rates, depending on a variety of factors (i.e. temperature, concentration, surface area, and agitation). E/S |
|
| P.12.A.6 | Students know chemical reactions either release or absorb energy. E/S |
| P.12.A.7 | Students know that, in chemical reactions, elements combine in predictable ratios, and the numbers of atoms of each element do not change. I/S |
| P.12.A.8 | Students know most elements have two or more isotopes, some of which have practical applications. I/S |
| P.12.A.9 | Students know the number of electrons in an atom determines whether the atom is electrically neutral or an ion. I/S |
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 | * Nova: Hunting the Elements
* Comprehensive discussions and questions
 |
| 25 | * Chemistry Basics
	+ The Periodic Table
	+ Bonds
	+ Atomic Structure
 |

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| --- | --- |
| P.12.A.1 | Students know different molecular arrangements and motions account for the different physical properties of solids, liquids, and gases. E/S |
|
| P.12.A.2 | Students know elements in the periodic table are arranged into groups and periods by repeating patterns and relationships. E/S |
| P.12.A.4 | Students know atoms bond with one another by transferring or sharing electrons. E/S |
| P.12.A.5 | Students know chemical reactions can take place at different rates, depending on a variety of factors (i.e. temperature, concentration, surface area, and agitation). E/S |
|
| P.12.A.6 | Students know chemical reactions either release or absorb energy. E/S |
| P.12.A.7 | Students know that, in chemical reactions, elements combine in predictable ratios, and the numbers of atoms of each element do not change. I/S |
| P.12.A.8 | Students know most elements have two or more isotopes, some of which have practical applications. I/S |
| P.12.A.9 | Students know the number of electrons in an atom determines whether the atom is electrically neutral or an ion. I/S |
|

 | * Nova: Hunting the Elements
* Comprehensive discussions and questions
* Periodic Table Coloring Activity (Families)
* Periodic Table Scavenger Hunt
* Balancing Equations PowerPoint and practice problems
 |
| 26 | * HSPE Testing Week
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| P.12.B.1 | Students know laws of motion can be used to determine the effects of forces on the motion of objects. E/S |
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 | * Science Olympics
	+ Paper Rockets
	+ Egg Drop
	+ Popsicle Stick Bridges
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| 27 | * Minerals
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| E.12.C.3 | Students know elements exist in fixed amounts and move through solid earth, oceans, atmosphere and living things as part of biogeochemical cycles. E/S |
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 | * Mineral PowerPoint discussion and Notes
* Making “geodes”
* Making rock candy
* Identifying rock samples
 |
| 28 | * The Rock Cycle
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| E.12.C.3 | Students know elements exist in fixed amounts and move through solid earth, oceans, atmosphere and living things as part of biogeochemical cycles. E/S |
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| E.12.C.4 | Students know processes of obtaining, using, and recycling of renewable and non-renewable resources. E/S |

 | * Rock Cycle PowerPoint discussion and notes
* Rock cycle modeling activity (melting crayon shavings)
* Mining in Nevada
 |
| 29 | * The Rock Cycle
 |

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| E.12.C.3 | Students know elements exist in fixed amounts and move through solid earth, oceans, atmosphere and living things as part of biogeochemical cycles. E/S |
|
|
| E.12.C.4 | Students know processes of obtaining, using, and recycling of renewable and non-renewable resources. E/S |

 | * Field Trip to the UNR Mineral and Mining Museum
* Review and Quiz
 |
| 30 | * Our Star: The Sun
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| E.12.B.1 | Students know common characteristics of stars. I/S |
| E.12.B.2 | Students know stars are powered by nuclear fusion of lighter elements into heavier elements, which results in the release of large amounts of energy. I/S |

 | * Sun PowerPoint notes, discussion and questions
* Layers of the Sun diagram
 |
| 31 | * Stars
 |

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| --- | --- |
| E.12.B.1 | Students know common characteristics of stars. I/S |
| E.12.B.2 | Students know stars are powered by nuclear fusion of lighter elements into heavier elements, which results in the release of large amounts of energy. I/S |
| E.12.B.3 | Students know ways in which technology has increased understanding of the universe. I/S |
|
| E.12.B.4 | Students know the on-going processes involved in star formation and destruction. W/L |
|
| E.12.B.5 | Students know scientific evidence suggest that the universe is expanding. I/S |

 | * Life cycle of a star
* Hertzsprung-Russell Diagrams
* Star Size Comparison Activity
 |
| 32 | * Stars
* Galaxies
* The Big Bang
 |

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| --- | --- |
| E.12.B.1 | Students know common characteristics of stars. I/S |
| E.12.B.2 | Students know stars are powered by nuclear fusion of lighter elements into heavier elements, which results in the release of large amounts of energy. I/S |
| E.12.B.3 | Students know ways in which technology has increased understanding of the universe. I/S |
|
| E.12.B.4 | Students know the on-going processes involved in star formation and destruction. W/L |
|
| E.12.B.5 | Students know scientific evidence suggest that the universe is expanding. I/S |

 | * Classifying Galaxies Activity
* Video Redshift
* Video: Stephen Hawking’s Universe
 |
| 33 | * Stars
* The Solar System
 |

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| E.12.B.1 | Students know common characteristics of stars. I/S |
| E.12.B.2 | Students know stars are powered by nuclear fusion of lighter elements into heavier elements, which results in the release of large amounts of energy. I/S |
| E.12.B.3 | Students know ways in which technology has increased understanding of the universe. I/S |
|
| E.12.B.4 | Students know the on-going processes involved in star formation and destruction. W/L |
|
| E.12.B.5 | Students know scientific evidence suggest that the universe is expanding. I/S |
|   | E.8.B.7: Students know regular and predictable motions of Earth around the Sun and the Moon around the Earth explain such phenomena as the day, the year, phases of the Moon, and eclipses. E/S |
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 | * Star Spectrum Analysis
* Solar System Model
* Planet Overview
 |
| 34 | * Stars
* The Solar System
 |

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| --- | --- |
| E.12.B.1 | Students know common characteristics of stars. I/S |
| E.12.B.2 | Students know stars are powered by nuclear fusion of lighter elements into heavier elements, which results in the release of large amounts of energy. I/S |
| E.12.B.3 | Students know ways in which technology has increased understanding of the universe. I/S |
|
| E.12.B.4 | Students know the on-going processes involved in star formation and destruction. W/L |
|
| E.12.B.5 | Students know scientific evidence suggest that the universe is expanding. I/S |
|   | E.8.B.7: Students know regular and predictable motions of Earth around the Sun and the Moon around the Earth explain such phenomena as the day, the year, phases of the Moon, and eclipses. E/S |
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 | * Research project on an astronomy topic chosen by each student to be presented to the class
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| 35 | * Stars
* The Solar System
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| E.12.B.1 | Students know common characteristics of stars. I/S |
| E.12.B.2 | Students know stars are powered by nuclear fusion of lighter elements into heavier elements, which results in the release of large amounts of energy. I/S |
| E.12.B.3 | Students know ways in which technology has increased understanding of the universe. I/S |
|
| E.12.B.4 | Students know the on-going processes involved in star formation and destruction. W/L |
|
| E.12.B.5 | Students know scientific evidence suggest that the universe is expanding. I/S |
|   | E.8.B.7: Students know regular and predictable motions of Earth around the Sun and the Moon around the Earth explain such phenomena as the day, the year, phases of the Moon, and eclipses. E/S |
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 | * Student presentations
 |
| 36 | * Stars
* The Solar System
 |

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| --- | --- |
| E.12.B.1 | Students know common characteristics of stars. I/S |
| E.12.B.2 | Students know stars are powered by nuclear fusion of lighter elements into heavier elements, which results in the release of large amounts of energy. I/S |
| E.12.B.3 | Students know ways in which technology has increased understanding of the universe. I/S |
|
| E.12.B.4 | Students know the on-going processes involved in star formation and destruction. W/L |
|
| E.12.B.5 | Students know scientific evidence suggest that the universe is expanding. I/S |
|   | E.8.B.7: Students know regular and predictable motions of Earth around the Sun and the Moon around the Earth explain such phenomena as the day, the year, phases of the Moon, and eclipses. E/S |
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 | * Review and Test
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