|  |  |  |  |
| --- | --- | --- | --- |
| Week | Topics | Standards | Activities/Assessments |
| 1 | * Introduction * Safe Experiments * Ethical Behavior | |  |  | | --- | --- | | N.12.A.4 | Students know how to safely conduct an original scientific investigation using the appropriate tools and technology. E/L | | | 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 | | | * Team Building Challenge (Tower: 5 straws, 5 paperclips) * Video: The Future: Body Questions |
| 2, 3, 4 | * Scientific Method * Process Skills | |  |  | | --- | --- | | 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 | |  |  | | --- | --- | | 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 |
| 1 | * Introduction * Safe Experiments * Ethical Behavior | |  |  | | --- | --- | | N.12.A.4 | Students know how to safely conduct an original scientific investigation using the appropriate tools and technology. E/L | | | 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 | | | * Team Building Challenge (Tower: 5 straws, 5 paperclips) * Video: The Future: Body Questions |
| 2, 3, 4 | * Scientific Method * Process Skills | |  |  | | --- | --- | | 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 |
| 6 | * Force and Motion   + Inertia   + Momentum | |  |  | | --- | --- | | 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 | | | | * Force and Motion Introductory Activities * Penny Drop * Tablecloth Trick * Videos on Inertia and Momentum |
| 7 | * Force and Motion   + Inertia   + Momentum   + Potential Energy   + Kinetic Energy | |  |  | | --- | --- | | 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 | | | | * Force and Motion PowerPoint notes/discussion * Mythbusters Airline Crash video * Roller Coaster Physics Webquest |
| 8 | * Force and Motion   + Inertia   + Momentum   + Potential Energy   + Kinetic Energy * Dimensional Analysis (Unit Conversion) | |  |  | | --- | --- | | 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 | | | | * PVC Tube/Ball Bearing Roller Coaster Activity * Introduce Dimensional Analysis   + Practice activities |
| 9 | * Force and Motion * Dimensional Analysis | |  |  | | --- | --- | | 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 | | | | * Speed/Rate Problems * Dimensional Analysis problems |
| 10 | * Force and Motion | |  |  | | --- | --- | | 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 | | | | * Mythbusters Penny Drop * Dimensional Analysis |
| 11 | * Force and Motion | |  |  | | --- | --- | | 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 | | | | * Faster and Faster Lab (toy cars on various inclined planes, measure velocity and graph results) * Review * Force and Motion Test |
| 12 | * HSPE Testing Week |  |  |
| 13 | * Force and Motion * Simple Machines | |  |  | | --- | --- | | 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 | | | | * Reteach and retest on Force and Motion * Introduce Simple Machines   + Notes/discussion * Pulley Lab |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 14,15 | * Force and Motion * Simple Machines | |  |  | | --- | --- | | 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 | | | | * Simple Machines PowerPoint   + Notes/discussion * Determining the mechanical advantage for various pulley configurations * Pulley Lab Make-up |
| 16 | * Force and Motion * Simple Machines | |  |  | | --- | --- | | 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 | | | | * Simple Machines PowerPoint   + Notes/discussion * Lever Lab Activity * Determining the mechanical advantage for:   + Wedges   + Inclined Planes * Inclined Plane Activity |
| 17 | * Force and Motion * Simple Machines | |  |  | | --- | --- | | 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 | | | | * Simple Machines PowerPoint   + Notes/discussion * Determining the mechanical advantage for:   + Wheels and Axles   + Screws |
| 18 | * Force and Motion * Simple Machines | |  |  | | --- | --- | | 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 | | | | * Review |
| 19 | * 2nd Semester Rules * Start HSPE Review |  | * HSPE pre-assessment * Discussion |
| 20 | * History of the Earth | |  |  | | --- | --- | | 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 | | | | | | 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 Story Discussion and questions |
| 21 | * Electricity and Magnetism | |  |  | | --- | --- | | P.12.B.2 | Students know magnetic forces and electric forces can be thought of as different aspects of electromagnetic force. I/S | | * Electricity and Magnetism PowerPoint, Notes and Discussion * Electromagnet demonstration * Circuit Activity |
| 22 | * Electricity and Magnetism * Chemistry Basics   + The Periodic Table   + Bonds   + Atomic Structure | |  |  | | --- | --- | | 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 * Electric circuit diagramming |
| 23 | * Electricity and Magnetism * Chemistry Basics   + The Periodic Table   + Bonds   + Atomic Structure | |  |  | | --- | --- | | 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.4 | Students know atoms bond with one another by transferring or sharing electrons. E/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 * How to Jumpstart a Car * Make simple electric motors |
| 24 | * HSPE Review   + Genetics   + Energy | |  |  | | --- | --- | | L.12.A.1 | Students know genetic information passed from parents to offspring is coded in the DNA molecule. E/S | | L.12.A.5 | Students know how to predict patterns of inheritance. E/S | P.12.C.2 | Students know energy forms can be converted. E/S | | P.12.C.2 | Students know energy forms can be converted. E/S | | * Leprechaun Genetics Activity * Energy of a Cheeto Demonstration/Lab |
| 25 | * Chemical Bonds * Balancing Equations * Data Graphing | |  |  |  | | --- | --- | --- | | P.12.A.4 | | Students know atoms bond with one another by transferring or sharing electrons. 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 | | 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 | | | | | * PowerPoint Notes and Discussion * Practice Activities |
| 26 | * HSPE Testing Week |  |  |
| 27 | * Properties of Matter | |  |  | | --- | --- | | P.12.A.2 | Students know elements in the periodic table are arranged into groups and periods by repeating patterns and relationships. E/S | | * Properties of Matter PowerPoint notes, discussion and questions * Density Lab * Density Column |
| 28 | * The Periodic Table: Elements | |  |  | | --- | --- | | P.12.A.2 | Students know elements in the periodic table are arranged into groups and periods by repeating patterns and relationships. E/S | | * Alien Periodic Table Activity * Adopt an Element Research Project |
| 29 | * The Periodic Table: Elements * Isotopes | |  |  |  |  | | --- | --- | --- | --- | | P.12.A.8 | Students know most elements have two or more isotopes, some of which have practical applications. I/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.2 | Students know elements in the periodic table are arranged into groups and periods by repeating patterns and relationships. E/S | | * Student Presentations on their Element * Penny Isotope Lab |
| 30 | * Ionic and Covalent Bonding | |  |  | | --- | --- | | P.12.A.4 | Students know atoms bond with one another by transferring or sharing electrons. E/S | | * Ionic & Covalent Bonding video * Gizmo: Ionic Bonds |
| 31 | * Ionic and Covalent Bonding | |  |  | | --- | --- | | P.12.A.4 | Students know atoms bond with one another by transferring or sharing electrons. E/S | | * Lewis Structure PowerPoint and practice * Gizmo: Covalent Bonds |
| 32 | * Compounds * Exothermic and Endothermic Reactions | |  |  | | --- | --- | | 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 | | * Common Compound Name Activity * Exothermic and Endothermic Reaction lab |
| 33 | * Chemistry Review |  | * Unit Test |
| 34 | * Nuclear Chemistry | |  |  | | --- | --- | | P.12.C.3 | Students know nuclear reactions convert a relatively small amount of material into a large amount of energy. I/S | | P.12.C.4 | Students know characteristics, applications and impacts of radioactivity. E/S | | * PowerPoint notes, discussion and questions * Videos on the development and testing of the first atomic bombs |
| 35 | * Nuclear Weapons | |  |  | | --- | --- | | P.12.C.3 | Students know nuclear reactions convert a relatively small amount of material into a large amount of energy. I/S | | P.12.C.4 | Students know characteristics, applications and impacts of radioactivity. E/S | | * Nevada’s role in nuclear weapons testing * Hiroshima and Nagasaki |
| 36 | * Scientific Method | |  |  | | --- | --- | | N.12.A.4 | Students know how to safely conduct an original scientific investigation using the appropriate tools and technology. E/L | | | * Develop experiments to test items of interest, such as the Mentos in Diet Coke reaction |