



Bow High School - Course Map

Course Title: Integrated Physical Science
Department: Science

Unit Name: Class Policies & Lab Safety
Topics: • Class Policies • Lab Safety
School Competencies: • Executive Functioning (Wellness - Foundational)
Course Competencies: • Given a 'cause and effect' question, students will design and safely conduct a controlled experiment.
Formative Assessments: • Daily Prompts on: Class Procedures, Safety Precautions
Summative Assessments: • Safety Summative (highlight indicates Competency Crosswalk completed for this Summative)



Bow High School - Course Map

Unit Name: How do we know what we know?
Topics: • Observation • Inference • Measurement in Science • Experimental Design • Measuring Distance in SI
School Competencies: • Interpretation (Problem Solving & Analysis - Foundational) • Logical Processing (Problem Solving & Analysis - Foundational)
Course Competencies: • Scientific Process • Metric Units and Instruments
Formative Assessments: • Daily Prompts on: Observation 1 & 2, Observation & Measurement, SI Units, Metric Conversions, Experimental Design • Mini Labs: Observation Poster, Measuring Mass, Metric System Scavenger Hunt, Measuring Length, Spaghetti Lab, Measuring Liquid and Solid Volume
Summative Assessments: • Observation & Inference Summative • SI Metric System Summative



Bow High School - Course Map

Unit Name: Energy Introduction
Topics: Our Universe 1st & 2nd Law of Thermodynamics Human Power Station
School Competencies: ● Interpretation (Problem Solving & Analysis - Foundational) ● Logical Processing (Problem Solving & Analysis - Foundational)
Course Competencies: ● Given a device or process, students will explain the energy changes and conversions that take place within it and relate these energy changes to the 1st and 2nd Laws of Thermodynamics. ● Energy types and thermodynamics
Formative Assessments: ● Daily Prompts on: Our Universe, 1st Law of Thermodynamics, 2nd Law of Thermodynamics
Summative Assessments: ● Summative: Energy



Bow High School - Course Map

Unit Name: Mechanical Energy
Topics: • Gravitational Potential Energy • Kinetic Energy • Experimental Design
School Competencies: • Scientific Experimental Design (Problem Solving & Analysis - Advanced)
Course Competencies: • Given a 'cause and effect' question, students will design and safely conduct a controlled experiment. • Given a mechanical device or process, students will explain the conversions that take place between potential and kinetic energy.
Formative Assessments: • Daily Prompts on: Mechanical Energy, Experimental Design, Measuring Distance in SI, Mechanical Energy Experiment, Procedure Data & Graphing, Experimental Design 2, Induction & Deduction, Elastic Potential Energy, Work and Power, • Labs: Build a Better Wrecking Ball, Mechanical Energy Experiment Planning and Prelab
Summative Assessments: • Mechanical Energy Experiment Write-up • Work and Power Summative



Bow High School - Course Map

Unit Name: Electromagnetic Energy
Topics: • Atomic Structure - electrons and protons • Six basic concepts of charge imbalance • Electric Potential Energy • Flow of electrons: current, resistance, potential difference • Current and circuits • Voltaic Cells • Magnetization and demagnetization • Electricity and magnets
School Competencies: • Technological & Science Understanding (Problem Solving & Analysis - Advanced)
Course Competencies: • Given a device or process, students will describe and explain the behavior of electrons and will use their knowledge of this behavior to explain electrical and magnetic phenomena in terms of energy concepts. • Students will also explain waves as a method of transferring energy without transferring matter.
Formative Assessments: • Daily Prompts on: Circuits, Voltage, Voltaic Cells, Magnets, Electromagnets, • Lab: Force at a Distance • Lab: the Electrophorus • Lab: Currents & Circuits Part 1-4
Summative Assessments: • Charge Imbalance Summative • Circuits Summative



Bow High School - Course Map

Unit Name: Chemical Energy
Topics: • Chemical Reaction Types - Exergonic and Endergonic • Decomposition and Synthesis of Water • Explosions • Calorimetry
School Competencies: • Interpretation (Problem Solving & Analysis - Foundational) • Logical Processing (Problem Solving & Analysis - Foundational)
Course Competencies: • Given specific examples of chemical reactions, students will describe the energy changes that take place and represent the energy changes in the form of a qualitative energy change graph.
Formative Assessments: • Daily Prompts on: Chemical Energy, Chemical Energy Lab, Chemical Energy Changes, Chemical Energy Change Graphs, Explosions • Lab - Decomposition and Synthesis of Water • Explosions - How we shook the world Questions • Lab - Calorimetry
Summative Assessments: • Summative: Chemical Energy



Bow High School - Course Map

Unit Name: Types and Properties of Matter
Topics: • Mixture Separation • Kinetic Molecular Model of Matter • Types of Matter • Physical properties and Chemical properties of Matter • Physical and Chemical Changes • Identifying matter using physical properties and chemical properties • Bohr Models
School Competencies: • Interpretation (Problem Solving & Analysis - Foundational) • Logical Processing (Problem Solving & Analysis - Foundational)
Course Competencies: • Given a sample of some matter, students will determine the type and phase of matter as well as identify its composition by determining its chemical and physical properties. Given a mixture of substances, students will use the different physical properties of...
Formative Assessments: • Road Grime Mixture Separation Lab • Separating Mixtures: Paper Chromatography • Lab: Identifying Matter based on Physical Properties • Lab: Identifying Matter based on Chemical Properties • Unknown Liquids Lab • Virtual Lab - Physical vs. Chemical Changes
Summative Assessments: • Summative: Matter - types and properties



Bow High School - Course Map

Unit Name: Periodic Table
Topics: • Atomic Structure - electrons, protons, and neutrons • Bohr Models • Patterns in the Periodic Table
School Competencies: • Interpretation (Problem Solving & Analysis - Foundational) • Logical Processing (Problem Solving & Analysis - Foundational)
Course Competencies: • Given a periodic table as a reference, students will be able to determine specific characteristics an element has based on its location on the periodic table. Students will also be able to identify patterns and making inferences about the properties of other elements in the same group based on their location on the periodic table.
Formative Assessments: • Practice: Bohr Models • Patterns in the Periodic Table • Element Code Puzzles 1 & 2
Summative Assessments: • Summative Assessments - Patterns in the Periodic Table



Bow High School - Course Map

Unit Name: Chemical Bonding
Topics: • Ions, Ionic Bonding, Ionic Compounds • Covalent Bonding, Covalent Compounds
School Competencies:. • Interpretation (Problem Solving & Analysis - Foundational) • Logical Processing (Problem Solving & Analysis - Foundational)
Course Competencies: • Given a periodic table as a reference, students will: determine the formula and name for binary ionic compounds, determine the formula and draw the structure of simple covalent compounds, use a molecular model kit to build a model of a simple covalent compound
Formative Assessments: • Ionic Compounds Collaborative Slideshow • Lab: Covalent Bonding Paper Models • Lab: 3D Models of Covalent Compounds
Summative Assessments: • Quiz: Ionic Compounds • Covalent Bonding Slideshow



Bow High School - Course Map

Unit Name: Chemical Reactions and Equations
Topics: • Balancing Chemical Equations • 6 Types of Chemical Reactions
School Competencies: • Interpretation (Problem Solving & Analysis - Foundational) • Logical Processing (Problem Solving & Analysis - Foundational)
Course Competencies: • Given a chemical equation, students will: balance the equation, identify the type of reaction, predict the products for simple chemical reactions.
Formative Assessments: • Daily Prompts 68, 69 • Balancing Chemical Equations 1 • Practice: Identifying and Balancing Equations
Summative Assessments: • Chemical Reactions and Equations



Bow High School - Course Map

Unit Name: Alternative Electricity Production
Topics: • Fossil Fuel Electricity Production • Alternative Electricity Production
School Competencies: • Viable Technological Usage (Problem Solving & Analysis - Foundational)
Course Competencies: • Given a device or process, students will explain the energy changes and conversions that take place within it and relate these energy changes to the 1st and 2nd Laws of Thermodynamics. • Given a sample of some matter, students will determine the type and phase of matter as well as identify its composition by determining its chemical and physical properties. • Given a mixture of substances, students will use the different physical properties of the components to separate them from each other.
Formative Assessments: • Fossil Fuel Electricity Production
Summative Assessments: • Alternative Electricity Stop Motion Animation • Alternative Electricity Production Individual Assessment