

**Jasper City Schools Curriculum Map  
Physical Science**

<b>Course Name: Physical Science</b>	
<b>Unit 1: Methods of Science</b>	
<b>Time Frame:</b>	<b>2 weeks</b>
<b>Unit Standards</b>	ACOS 12: Identify metric units for mass, distance, time, temperature, velocity, acceleration, density, force, energy, and power
<b>Unit Essential Questions</b>	What is science? How do scientists communicate their data? How do I use the metric system?
<b>Unit Essential Vocabulary</b>	scientific method, hypothesis, experiment, variable, dependent variable, independent variable, constant, control, bias, model, theory, scientific law, technology, graph, precision, accuracy, significant digits, scientific notation, SI, line graph, bar graph, pie graph, volume, density, percent difference, dimensional analysis
<b>Resources</b>	Physical Science textbook Internet resources ASIM lab materials
<b>Assessment(s)</b>  <b>Assessment Data:</b>	Informal assessments Lab Formal assessment  Unit Test: A – B – C – D – F -
<b>Lab(s)</b>	Introduction to Graphing Density of Solids Measurement (coil of wire)

**Jasper City Schools Curriculum Map**  
**Physical Science**

**Course Name:** Physical Science

**Unit 2: Motion**

**Time Frame:** 3 weeks

**Unit Standards**

ACOS 7 Relate velocity, acceleration, and kinetic energy to mass, distance, force, and time.  
 ACOS 7.1 Interpreting graphic representations of velocity versus time and distance versus time  
 ACOS 7.2 Solving problems for velocity, acceleration, force, work, and power  
 ACOS 7.3 Describing action and reaction forces, inertia, acceleration, momentum, and friction in terms of Newton's three laws of motion  
 ACOS 7.4 Determining the resultant of collinear forces acting on a body  
 ACOS 12 Identify metric units for mass, distance, time, temperature, velocity, acceleration, density, force, energy, and power.

**Unit Essential Questions**

What is the difference between speed and velocity?  
 How are force and motion related?  
 What is the relationship between mass and acceleration?  
 What is the difference between mass and weight?

**Unit Essential Vocabulary**

distance, displacement, speed, average speed, instantaneous speed, velocity, acceleration, force, net force, balanced forces, unbalanced forces, inertia, Newton's First Law of Motion, Newton's Second Law of Motion, Newton's Third Law of Motion, friction, static friction, sliding friction, air resistance, gravity, weight, centripetal acceleration, centripetal force, momentum, force, normal force, coefficient of static and kinetic friction, mass

**Resources**

Physical Science textbook  
 Internet resources  
 ASIM lab materials

**Assessment(s)**

Informal assessments  
 Lab  
 Formal assessment

**Assessment Data:**

Unit Test:  
 A –  
 B –  
 C –  
 D –  
 F -

**Lab(s)**

Walk Jog Run  
 Match the Graph  
 Newton's Second Law (Fan Carts)

**Jasper City Schools Curriculum Map**  
**Physical Science**

**Course Name:** Physical Science

**Unit 3: Energy**

**Time Frame:** 3.5 weeks

**Unit Standards**

ACOS 7 Relate velocity, acceleration, and kinetic energy to mass, distance, force, and time.  
 ACOS 7.2 Solving problems for velocity, acceleration, force, work, and power  
 ACOS 8 Relate the law of conservation of energy to transformations of potential energy, kinetic energy, and thermal energy.  
 ACOS 8.1 Identifying the relationship between thermal energy and the temperature of a sample of matter  
 ACOS 8.2 Describing the flow of thermal energy between two samples of matter  
 ACOS 8.3 Explaining how thermal energy is transferred by radiation, conduction, and convection  
 ACOS 8.4 Relating simple formulas to the calculation of potential energy, kinetic energy, and work  
 ACOS 11 Describe the nuclear composition of unstable isotopes and the resulting changes to their nuclear composition.  
 ACOS 12 Identify metric units for mass, distance, time, temperature, velocity, acceleration, density, force, energy, and power.

**Unit Essential Questions**

How are kinetic, potential, and total energy within a closed system related?  
 How are work and power related?  
 Why do people use simple machines?  
 What are the 6 simple machines and how do you calculate the mechanical advantage of simple machines?  
 What is the purpose of a machine when used to do work?  
 What is the difference between heat and temperature?  
 How is thermal energy transferred?  
 How do we use heat?  
 What is thermodynamics?

**Unit Essential Vocabulary**

kinetic energy, joule, potential energy, elastic potential energy, chemical potential energy, gravitational potential energy, mechanical energy, law of conservation of energy, work, power, horsepower, mechanical advantage, efficiency, machine, input force, output force, simple machine, lever, pulley, wheel and axle, inclined plane, screw, wedge, compound machine, ideal mechanical advantage, force, friction, temperature, heat, thermal energy, specific heat, conduction, convection, radiation, insulator, latent heat, solar collector, thermodynamics, first law of thermodynamics, second law of thermodynamics, heat engine, internal combustion engine

**Resources**

Physical Science textbook  
 Internet resources  
 ASIM lab materials

**Assessment(s)**

Informal assessments  
 Lab  
 Formal assessment  
 Unit Test:  
 A –  
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**Lab(s)**

Work & Power  
 Pulleys  
 Heat Transfer



**Jasper City Schools Curriculum Map  
Physical Science**

**Course Name:** Physical Science

**Unit 4: Electricity & Magnetism**

**Time Frame:** 2.5 weeks

**Unit Standards**

ACOS 10 Explain the relationship between electricity and magnetism.  
 ACOS 10.1 Differentiating between induction and conduction  
 ACOS 10.2 Identifying mechanical, magnetic, and chemical methods used to create an electrical charge  
 ACOS 10.3 Describing electrical circuits in terms of Ohm's law  
 ACOS 6 Identify characteristics of gravitational, electromagnetic, and nuclear forces.  
 ACOS 12 Identify metric units for mass, distance, time, temperature, velocity, acceleration, density, force, energy, and power.

**Unit Essential Questions**

How do objects become electrically charged?  
 How does a voltage difference cause current to flow?  
 What is the difference between series and parallel circuits?  
 What is the function of circuit breakers and fuses?  
 How can you use an ammeter to measure current?  
 How does electricity create a magnet?  
 How does an electric motor operate? What is the difference between an electric motor and a generator?  
 What is electromagnetic induction?  
 How does a generator deliver electricity to our homes?

**Unit Essential Vocabulary**

static electricity, law of conservation of charge, conductor, insulator, charging by contact, charging by induction, electric current, voltage difference, circuit, resistance, Ohm's Law, series circuit, parallel circuit, electrical power, potential difference, ammeter, fuse, magnetism, magnetic field, magnetic pole, magnetic domain, electromagnet, solenoid, galvanometer, electric motor, electromagnetic induction, generator, turbine, direct current, alternating current, transformer

**Resources**

Physical Science textbook  
 Internet resources  
 ASIM lab materials

**Assessment(s)**

Informal assessments  
 Lab  
 Formal assessment

**Assessment Data:**

Unit Test:  
 A –  
 B –  
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**Lab(s)**

Electricity Kits  
 Simple DC motor  
 Magnets  
 Hand Crank Generators



**Jasper City Schools Curriculum Map**  
**Physical Science**

**Course Name:** Physical Science

**Unit 5: Nature & Types of Waves**

**Time Frame:** 1 week

**Unit Standards**  
ACOS 9 Compare methods of energy transfer by mechanical and electromagnetic waves.  
ACOS 9.1 Distinguishing between transverse and longitudinal mechanical waves  
ACOS 9.2 Relating physical properties of sound and light to wave characteristics

**Unit Essential Questions**  
What is a wave?  
What are the differences between transverse and compressional (longitudinal) waves?  
What is the electromagnetic spectrum?  
Are waves applicable to our lives?

**Unit Essential Vocabulary**  
wave, medium, transverse wave, compressional wave, crest, trough, rarefaction, wavelength, frequency, period, amplitude, refraction, diffraction, interference, resonance, intensity, loudness, pitch, Doppler effect, electromagnetic waves, radiant energy, photon, radio wave, microwave, infrared wave, visible light, ultraviolet wave, X ray, gamma ray

**Resources**  
Physical Science textbook  
Internet resources  
ASIM lab materials

**Assessment(s)**  
Informal assessments  
Lab  
Formal assessment

**Assessment Data:**  
Unit Test:  
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**Lab(s)**  
WebQuest  
Slinky Lab

**Jasper City Schools Curriculum Map**  
**Physical Science**

**Course Name:** Physical Science

**Unit 6: Nature of Matter**

**Time Frame:** 2 weeks

**Unit Standards**

ACOS 2 Identify solutions in terms of components, solubility, concentration, and conductivity.  
 ACOS 2.1 Comparing saturated, unsaturated, and supersaturated solutions  
 ACOS 2.2 Comparing characteristics of electrolytes and nonelectrolytes  
 ACOS 2.3 Describing factors that affect solubility and rate of solution, including nature of solute and solvent, temperature, agitation, surface area, and pressure on gases  
 ACOS 5 Describe physical and chemical changes in terms of endothermic and exothermic processes.  
 ACOS 8 Relate the law of conservation of energy to transformations of potential energy, kinetic energy, and thermal energy.  
 ACOS 8.1 Identifying the relationship between thermal energy and the temperature of a sample of matter  
 ACOS 12 Identify metric units for mass, distance, time, temperature, velocity, acceleration, density, force, energy, and power.

**Unit Essential Questions**

What is the difference between an element and a compound?  
 What is the difference between heterogeneous and homogeneous mixtures?  
 What is the difference between solutions, colloids, and suspensions?  
 What will increase the rate of dissolving for solutions?  
 What is the difference between concentrated and diluted solutions?  
 How do you increase the solubility of a gas?  
 What is the difference between physical properties/changes and chemical properties/changes?  
 What is the law of conservation of mass?  
 What is the kinetic theory of matter?  
 What is a phase diagram?  
 How are force, area, and pressure related?  
 What is the difference between Boyle's and Charles' Laws?

**Unit Essential Vocabulary**

substance, element, compound, heterogeneous mixture, homogeneous mixtures, solution, colloid, Tyndall effect, suspension, solute, solvent, polar, solubility, saturated solution, unsaturated solution, supersaturated solution, ion, electrolyte, nonelectrolyte, ionization, dissociation, nonpolar, ion, electrolyte, nonelectrolyte, ionization, dissociation, nonpolar, physical property, physical change, distillation, chemical property, chemical change, law of conservation of mass, kinetic theory, melting point, heat of fusion, boiling point, heat of vaporization, diffusion, plasma, thermal expansion, endothermic, exothermic, condensation, evaporation, deposition, vaporization, sublimation, temperature, pascal, pressure, Boyle's Law, Charles' Law

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**Assessment(s)**

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 Lab  
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**Lab(s)**

Color of Chemistry  
 Kites (Bernoulli's Principle)

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Physical Science**

**Course Name: Physical Science**

**Unit 7: Diversity of Matter**

**Time Frame: 4 weeks**

**Unit Standards**

ACOS 1 Recognize periodic trends of elements, including the number of valence electrons, atomic size, and reactivity.

ACOS 1.1 Categorizing elements as metals, nonmetals, metalloids, and noble gases

ACOS 1.2 Differentiating between families and periods

ACOS 1.3 Using atomic number and mass number to identify isotopes

ACOS 3 Contrast the formation of ionic and covalent bonds based on the transfer or sharing of valence electrons.

ACOS 3.1 Demonstrating the formation of positive and negative monatomic ions by using electron dot diagrams

ACOS 4 Use nomenclature and chemical formulas to write balanced chemical equations.

ACOS 4.1 Explaining the law of conservation of matter

ACOS 4.2 Identifying chemical reactions as composition, decomposition, single replacement, or double replacement

ACOS 4.3 Defining the role of electrons in chemical reactions

**Unit Essential Questions**

What is an isotope and how are their nuclear symbols written?

What are the properties of metals and what type of bonding do they undergo?

How are the alkali and alkaline earth metals different?

What are the properties of nonmetals?

Compare and contrast the properties of the halogens.

Describe properties and uses of the noble gases.

What is a diatomic molecule and which elements are a diatomic molecule?

How are metalloids similar to both metals and nonmetals?

What information is given on the periodic table?

Why do elements bond?

How are ionic and covalent compounds named?

What is a chemical reaction?

Why must a chemical equation be balanced?

**Unit Essential Vocabulary**

atomic number, mass number, isotope, average atomic mass, electron dot diagram, nuclear symbol, nuclide, metals, malleable, ductile, metallic bonding, radioactive element, transition elements, nonmetals, diatomic molecule, metalloid, allotrope, semiconductor, transuranium element, atomic number, mass number, isotopes, proton, neutron, electron, atomic mass, ion, chemical formula, chemical bond, ionic bond, covalent bond, molecule, polar molecule, nonpolar molecule, lewis dot structure, binary compound, oxidation number, polyatomic ion, chemical reaction, reactant, product, chemical equation, coefficient

**Resources**

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**Lab(s)**

Chemicool People  
Element Kits  
Atomic Structure Puzzle  
Excited Elements  
Balancing Equations with Legos