

**RIDGECROFT SCHOOL  
GRADE 8 SCIENCE**

**PACING GUIDE**

<b>TOPICS/CONCEPTS</b>	<b>TIME</b>	<b>CURRICULUM OBJECTIVES</b> Goal 1 Inquiry and Goal 2 Technology will be integrated throughout content	<b>RESOURCE(S)</b> SCIENCE MODULES (Prentice Hall)
<b>FIRST GRADING PERIOD</b>			
SOUND AND LIGHT • Characteristics of Waves • Sound • Electromagnetic Spectrum • Light	30	4.01, 4.02, 4.03, 4.04, 4.05, 4.06, 4.07	TEXTBOOK MODULE: SOUND AND LIGHT
<b>SECOND GRADING PERIOD</b>			
ELECTRICITY AND MAGNETISM • Magnetism and Electromagnetism • Electric charges and Current • Electricity and Magnetism at Work • Electronics	30	5.01, 5.02 5.03	TEXTBOOK MODULE: ELECTRICITY AND MAGNETISM
<b>THIRD GRADING PERIOD</b>			
MOTION AND FORCES • Motion • Forces • Forces in Fluids	25	3.01, 3.02, 3.03, 3.04, 3.05, 3.06	TEXTBOOK MODULE: MOTION, FORCES, AND ENERGY
REVIEW AND ASSESSMENT	5		
<b>FOURTH GRADING PERIOD</b>			
MOTION AND FORCES • Work and machines • Energy and Power • Thermal Energy and Heat	20	3.01, 3.02, 3.03, 3.04, 3.05, 3.06 4.01, 4.02, 4.06	TEXTBOOK MODULE: MOTION, FORCES, AND ENERGY
CHEMICAL BUILDING BLOCKS • Introduction to Matter • Changes in Matter	10	7.01, 7.02, 7.03, 7.04, 7.05	TEXTBOOK MODULE: CHEMICAL BUILDING BLOCKS
<b>FIFTH GRADING PERIOD</b>			
CHEMICAL BUILDING BLOCKS • Elements and the Periodic Table • Carbon Chemistry	20	6.01, 6.02, 6.03, 6.04, 6.05, 6.06, 6.07, 6.08, 6.09, 6.10	TEXTBOOK MODULE: CHEMICAL BUILDING BLOCKS
CHEMISTRY INTERACTIONS • Chemical Reactions	10	6.01, 6.02, 6.03, 6.04, 6.05, 6.06, 6.07, 6.08, 6.09, 6.10	TEXTBOOK MODULE: FROM BACTERIA TO PLANTS
<b>SIXTH GRADING PERIOD</b>			
CHEMISTRY INTERACTIONS • Atoms and bonding • Acids, Bases, and Solutions • Exploring materials	25	6.01, 6.02, 6.03, 6.04, 6.05, 6.06, 6.07, 6.08, 6.09, 6.10	TEXTBOOK MODULE: FROM BACTERIA TO PLANTS
REVIEW AND ASSESSMENT	5		

### GOALS AND OBJECTIVES

**NOTE: The goals and objectives for Grades 6-8 science are abased on a reclustering of the NC Standard Course of Study.**

<b>GOAL 1: THE LEARNER WILL DESIGN AND CONDUCT INVESTIGATIONS TO DEMONSTRATE AN UNDERSTANDING OF SCIENTIFIC INQUIRY.</b>	
<p>1.01 Identify and create questions and hypotheses that can be answered through scientific investigations.</p> <p>1.02 Develop appropriate experimental procedures for:</p> <ul style="list-style-type: none"> <li>• Given questions,</li> <li>• Student generated questions</li> </ul> <p>1.03 Apply safety procedures in the laboratory and in field studies:</p> <ul style="list-style-type: none"> <li>• Recognize potential hazards</li> <li>• Manipulate materials and equipment</li> <li>• Conduct appropriate procedures</li> </ul> <p>1.04 Analyze variables in scientific investigations:</p> <ul style="list-style-type: none"> <li>• Identify dependent and independent</li> <li>• Use of a control</li> <li>• Manipulate</li> <li>• Describe relationships between</li> <li>• Define operationally</li> </ul> <p>1.05 Analyze evidence to:</p> <ul style="list-style-type: none"> <li>• Explain observations</li> <li>• Make inferences and predictions</li> <li>• Develop the relationship between evidence and explanation</li> </ul>	<p>1.06 Use mathematics to gather, organize, and present quantitative data resulting from scientific investigations:</p> <ul style="list-style-type: none"> <li>• Measurement</li> <li>• Analysis of data</li> <li>• Graphing</li> <li>• Prediction models</li> </ul> <p>1.07 Prepare models and/or computer simulations to:</p> <ul style="list-style-type: none"> <li>• Test hypothesis</li> <li>• Evaluate how data fit</li> </ul> <p>1.08 Use oral and written information systems to:</p> <ul style="list-style-type: none"> <li>• Communicate findings</li> <li>• Defend conclusions of scientific investigations</li> </ul> <p>1.09 Use technologies and information systems to:</p> <ul style="list-style-type: none"> <li>• Research</li> <li>• Gather and analyze data</li> <li>• Visualize data</li> <li>• Disseminate findings to others</li> </ul> <p>1.10 Analyze and evaluate information from a scientifically literate viewpoint by reading, hearing , and/or viewing:</p> <ul style="list-style-type: none"> <li>• Scientific text</li> <li>• Articles</li> <li>• Events in the popular press</li> </ul>
<b>GOAL 2: THE LEARNER WILL DEMONSTATE AN UNDERSTANDING OF TECHNOLOGICAL DESIGN</b>	
<p>2.01 Explore evidence that “technology” has many definitions.</p> <ul style="list-style-type: none"> <li>• Artifact or hardware</li> <li>• Methodology or technique</li> <li>• System of production</li> <li>• Social-technical system</li> </ul> <p>2.02 Use information systems to:</p> <ul style="list-style-type: none"> <li>• Identify scientific needs, human needs, or problems that are subject to technological solution</li> <li>• Locate resources to obtain and test ideas</li> </ul>	<p>2.03 Evaluate technological designs for:</p> <ul style="list-style-type: none"> <li>• Application of scientific principles</li> <li>• Risks and benefits</li> <li>• Constraints of design</li> <li>• Consistent testing protocols</li> </ul> <p>2.04 Apply tenets of technological design to make informed consumer decisions about:</p> <ul style="list-style-type: none"> <li>• Products</li> <li>• Processes</li> <li>• Systems</li> </ul>
<b>GOAL 3: THE LEARNER WILL CONDUCT INVESTIGATIONS, USE MODELS, SIMULATIONS, AND APPROPRIATE TECHNOLOGIES AND INFORMATION SYSTEMS TO BUILD AN UNDERSTANDING OF MOTION AND FORCES.</b>	
<p>3.01 Demonstrate ways that simple machines can change force.</p> <p>3.02 Analyze simple machines for mechanical advantage and efficiency.</p> <p>3.03 Evaluate motion in terms of Newton’s Laws:</p> <ul style="list-style-type: none"> <li>• The force of friction retards motion</li> <li>• For every action there is an equal and opposite reaction</li> <li>• The greater the force, the greater the change in motion</li> </ul>	<p>3.05 Describe and measure quantities that characterize moving objects and their interactions within a system:</p> <ul style="list-style-type: none"> <li>• Time</li> <li>• Distance</li> <li>• Mass</li> <li>• Force</li> <li>• Velocity</li> <li>• Center of mass</li> <li>• Acceleration</li> </ul> <p>3.06 Investigate and analyze the real world interactions of</p>

<ul style="list-style-type: none"> <li>An object's motion is the result of the combined effect of all forces acting on the object</li> <li>A moving object that is not subjected to a force will continue to move at a constant speed in a straight line</li> <li>An object at rest will remain at rest</li> </ul> <p>3.04 Analyze that an object's motion is always judged relative to some other object or point.</p>	<p>balanced and unbalanced forces:</p> <ul style="list-style-type: none"> <li>Sports and recreation</li> <li>Transportation</li> <li>The human body</li> </ul>
<p><b>GOAL 4: THE LEARNER WILL CONDUCT INVESTIGATIONS AND EXAMINE MODELS AND DEVICES TO BUILD AN UNDERSTANDING OF THE CHARACTERISTICS OF ENERGY TRANSFER AND/OR TRANSFORMATION.</b></p>	
<p>4.01 Determine how convection and radiation transfer energy.</p> <p>4.02 Analyze heat flow through materials or across space from warm objects to cooler objects until both objects are at equilibrium.</p> <p>4.03 Analyze sound as an example that vibrating materials generate waves that transfer energy.</p> <ul style="list-style-type: none"> <li>Frequency</li> <li>Amplitude</li> <li>Loudness</li> <li>How sound travels through different material</li> <li>Form and function of the human ear</li> </ul> <p>4.04 Evaluate data for qualitative and quantitative relationships associated with energy transfer and/or transformation.</p> <p>4.05 Analyze the physical interactions of light and matter:</p> <ul style="list-style-type: none"> <li>Absorption</li> <li>Scattering</li> <li>Color perception</li> <li>Form and function of the human eye</li> </ul>	<p>4.06 Analyze response to heat to determine the suitability of materials for use in technological design:</p> <ul style="list-style-type: none"> <li>Conduction</li> <li>Expansion</li> <li>Contraction</li> </ul> <p>4.07 Analyze the Law of Conservation of Energy:</p> <ul style="list-style-type: none"> <li>Conclude that energy cannot be created or destroyed, but only changed from one form into another;</li> <li>Conclude that the amount of energy stays the same, although within the process some energy is always converted to heat</li> <li>Some systems transform energy with less loss of heat than others</li> </ul>
<p><b>COMPETENCY GOAL 5: THE LEARNER WILL CONSTRUCT AN UNDERSTANDING OF ELECTRICITY AND MAGNETISM.</b> (From SCOS – Physical Science)</p>	
<p>5.01 Investigate and analyze the nature of static electricity and the conservation of electrical charge:</p> <ul style="list-style-type: none"> <li>Positive and negative charges</li> <li>Opposite charges attract and like charges repel</li> <li>Analyze the electrical charging of objects due to the transfer of charge</li> </ul> <p>5.02 Investigate and analyze direct current electrical circuits:</p> <ul style="list-style-type: none"> <li>Ohm's law</li> <li>Series circuits</li> <li>Parallel circuits</li> </ul>	<p>5.03 Investigate and analyze magnetism and the practical applications of the characteristics of magnets.</p> <ul style="list-style-type: none"> <li>Permanent magnets</li> <li>Electromagnetism</li> <li>Movement of electrical charges</li> </ul>
<p><b>GOAL 6: THE LEARNER WILL CONDUCT INVESTIGATIONS AND UTILIZE TECHNOLOGY AND INFORMATION SYSTEMS TO BUILD AND UNDERSTANDING OF CHEMISTRY.</b></p>	
<p>6.01 Understand that both naturally occurring and synthetic substances are chemicals.</p> <p>6.02 Evaluate evidence that elements combine in a multitude of ways to produce compounds that account for all living and nonliving substances.</p> <p>6.03 Explain how the periodic table is a model for:</p> <ul style="list-style-type: none"> <li>Classifying elements</li> <li>Identifying the properties of elements</li> </ul> <p>6.04 Describe the suitability of materials for use in technological design:</p> <ul style="list-style-type: none"> <li>Electrical conductivity</li> </ul>	<p>6.07 Identify evidence supporting the law of conservation of matter.</p> <ul style="list-style-type: none"> <li>During an ordinary chemical reaction matter cannot be created or destroyed</li> <li>In a chemical reaction, the total mass of the reactants equals the total mass of the products</li> </ul> <p>6.08 Identify evidence that some chemicals may contribute to human health conditions including:</p> <ul style="list-style-type: none"> <li>Cancer</li> <li>Autoimmune disease</li> <li>Birth defects</li> </ul>

<ul style="list-style-type: none"> <li>• Density,</li> <li>• Magnetism</li> <li>• Solubility</li> <li>• Malleability</li> <li>• 6.05 Identify substances based on characteristic physical properties: Density</li> <li>• Boiling/melting points</li> <li>• Solubility</li> <li>• Chemical reactivity</li> <li>• Specific heat</li> </ul> <p>6.06 Describe and measure quantities related to chemical/physical changes within a system:</p> <ul style="list-style-type: none"> <li>• Temperature</li> <li>• Volume</li> <li>• Mass</li> <li>• Precipitate</li> <li>• Gas production</li> </ul>	<ul style="list-style-type: none"> <li>• Heart disease</li> <li>• Diabetes</li> <li>• Learning and behavioral disorders</li> <li>• Kidney disease</li> <li>• Asthma</li> </ul> <p>6.09 Describe factors that determine the effects a chemical has on a living organism including:</p> <ul style="list-style-type: none"> <li>• Exposure</li> <li>• Potency</li> <li>• Dose and the resultant concentration of chemical in the organism</li> <li>• Individual susceptibility</li> <li>• Possible means to eliminate or reduce effects</li> </ul> <p>6.10 Describe risks and benefits of chemicals including:</p> <ul style="list-style-type: none"> <li>• Medicines</li> <li>• Food preservatives</li> <li>• Crop yield</li> <li>• Sanitation</li> </ul>
---	---

**GOAL 7: THE LEARNER WILL INVESTIGATE THE CYCLING OF MATTER**

<p>7.01 Describe the flow of energy and matter in natural systems:</p> <ul style="list-style-type: none"> <li>• Energy flows through ecosystems in one direction, from the sun through producers to consumers to decomposers</li> <li>• Matter is transferred from one organism to another and between organisms and their environments</li> <li>• Water, nitrogen, carbon dioxide, and oxygen are substances cycled between the living and non-living environments</li> </ul> <p>7.02 Evaluate the significant role of decomposers.</p> <p>7.03 Examine evidence that green plants make food.</p> <ul style="list-style-type: none"> <li>• Photosynthesis is a process carried on by green plants and other organisms containing chlorophyll</li> <li>• During photosynthesis, light energy is converted into stored energy which the plant, in turn, uses to carry out its life processes</li> </ul>	<p>7.04 Evaluate the significance of photosynthesis to other organisms: The major source of atmospheric oxygen is photosynthesis</p> <ul style="list-style-type: none"> <li>• Carbon dioxide is removed from the atmosphere and oxygen is released during photosynthesis</li> <li>• Green plants are the producers of food that is used directly or indirectly by consumers</li> </ul> <p>7.05 Evaluate designed systems for ability to enable growth of certain plants and animals.</p>
--	--