

# Next Generation Science Standards at a Glance

## Elementary

## Physical Science



General Topic	Performance Expectations	CloudLabs Learning Unit	CloudLabs Simulations
Energy	<p><b>4-PS3-2</b> Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.</p> <p><b>4-PS3-4</b> Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.</p>	<p><b>Area:</b> CloudLabs Natural Science</p> <p><b>Unit:</b> Electrical energy</p> <p><b>Activity 1:</b> Electric power</p> <p><b>Activity 2:</b> Circuits, motors and batteries</p> <p><b>Activity 3:</b> Conductive and insulating materials</p>	<ul style="list-style-type: none"> <li>• How does a light bulb work?</li> <li>• Let's build a helicopter</li> <li>• Let's make an electric stove</li> <li>• How can I generate electricity with water?</li> </ul>



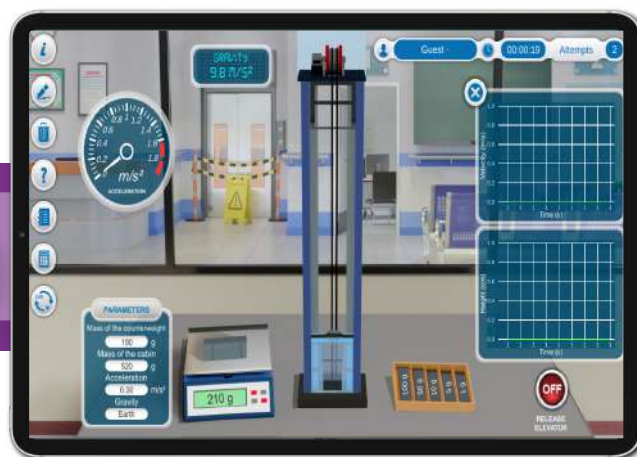
## Elementary

## Life Science

General Topic	Performance Expectations	CloudLabs Learning Unit	CloudLabs Simulations
Biological evolution	<p><b>2-LS4-1</b> Make observations of plants and animals to compare the diversity of life in different habitats.</p>	<p><b>Area:</b> CloudLabs Natural Science</p> <p><b>Unit:</b> The living environment</p> <p><b>Activity 1:</b> Characteristics of living beings</p> <p><b>Activity 2:</b> Types of terrestrial ecosystems</p>	<ul style="list-style-type: none"> <li>• Taking Care of Fish Aquarium</li> <li>• Taking Care of Ants in the Terrarium</li> <li>• Plants and Climate Change</li> <li>• Life cycle of a butterfly</li> </ul>

# Physical Science

## Middle School



General Topic	Performance Expectations	CloudLabs Learning Unit	CloudLabs Simulations
Structure and Properties of Matter	<p><b>MS-PS1-1</b> Develop models to describe the atomic composition of simple molecules and extended structures.</p> <p><b>MS-PS1-4</b> Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.</p>	<p><b>Area:</b> General chemistry</p> <p><b>Unit:</b> Matter</p> <p><b>Activity 1:</b> Matter</p> <p><b>Activity 2:</b> Properties of Matter</p>	<ul style="list-style-type: none"> <li>• Properties of Matter</li> <li>• States of Matter</li> </ul>
Forces and Motion	<p><b>MS-PS2-1</b> Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.</p> <p><b>MS-PS2-2</b> Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.</p>	<p><b>Area:</b> Physics</p> <p><b>Unit:</b> Dynamics</p> <p><b>Activity 1:</b> Types of forces</p> <p><b>Activity 2:</b> Newton's laws</p>	<ul style="list-style-type: none"> <li>• Displacement of a moving a body</li> <li>• Lifting a load</li> <li>• Lifting a load- Free practice</li> </ul>
Types of Interactions	<p><b>MS-PS2-3</b> Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.</p> <p><b>MS-PS2-5</b> Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.</p>	<p><b>Area:</b> Physics</p> <p><b>Unit:</b> Electricity</p> <p><b>Activity 1:</b> Electric forces</p> <p><b>Activity 2:</b> Basic notions</p> <p><b>Activity 3:</b> Electrical Circuits</p>	<ul style="list-style-type: none"> <li>• Electrical quantities</li> <li>• Electric circuit in series</li> <li>• Mixed electrical circuit</li> </ul>



**Middle School**

**Life Science**

General Topic	Performance Expectations	CloudLabs Learning Unit	CloudLabs Simulations
<b>Structure and Function</b>	<p><b>MS-LS1-1</b> Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.</p> <p><b>MS-LS1-2</b> Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.</p>	<p><b>Area:</b> Biology</p> <p><b>Unit:</b> Cells and tissues</p> <p><b>Activity 1:</b> The cell and cell morphology</p> <p><b>Activity 2:</b> Generalities and cell functions</p> <p><b>Activity 3:</b> Structure and function of living things</p>	<ul style="list-style-type: none"> <li>Cell types</li> <li>Cellular metabolism</li> </ul>
<b>Organization for Matter and Energy Flow in Organisms</b>	<p><b>MS-LS1-6</b> Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.</p>	<p><b>Area:</b> Biology</p> <p><b>Unit:</b> Photosynthesis</p> <p><b>Activity 1:</b> Photosynthesis</p> <p><b>Activity 2:</b> The effect of light in photosynthesis</p> <p><b>Activity 3:</b> Factors affecting photosynthesis</p>	<ul style="list-style-type: none"> <li>General components of photosynthesis</li> <li>The effect of light on photosynthesis</li> <li>Factors affecting photosynthesis</li> </ul>



# Earth and Space Sciences

## High School



General Topic	Performance Expectations	CloudLabs Learning Unit	CloudLabs Simulations
Earth's Place in the Universe	<p><b>HS-ESS1-4</b> Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.</p> <p><b>HS-ESS1-6</b> Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.</p>	<p><b>Area:</b> Biology</p> <p><b>Unit:</b> Earth and Space Sciences</p> <p><b>Activity 1:</b> Planetary system</p> <p><b>Activity 2:</b> Earth</p> <p><b>Activity 3:</b> Universe physical properties, gravitation and Kepler's Laws</p>	<ul style="list-style-type: none"> <li>• The solar system</li> <li>• Planet Earth</li> <li>• Space mission - Gravitation</li> <li>• Kepler's laws</li> </ul>



## High School

## Physical Science

General Topic	Performance Expectations	CloudLabs Learning Unit	CloudLabs Simulations
Chemical reactions and chemical equilibrium	<p><b>HS-PS1-2</b> Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.</p> <p><b>HS-PS1-6</b> Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.</p>	<p><b>Area:</b> General chemistry</p> <p><b>Unit:</b> Chemical reactions</p> <p><b>Activity 1:</b> Chemical reactions</p> <p><b>Activity 2:</b> Chemical equilibrium</p>	<ul style="list-style-type: none"> <li>Tests for drinking water control - Dichromate chromate ion equilibrium</li> <li>Fertilizer production - Displacement of weak acids and bases</li> <li>Scale removal in pipelines - precipitation and dissolution of metal hydroxides</li> <li>Production of chemical compounds -Equilibrium of complex ions</li> </ul>
Stoichiometry	<p><b>HS-PS1-7</b> Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.</p>	<p><b>Area:</b>Analytical Chemistry</p> <p><b>Thematic:</b> Stoichiometry</p>	<ul style="list-style-type: none"> <li>Single displacement reactions</li> <li>Double displacement reactions</li> <li>Preparation of solutions</li> <li>Redox reactions</li> </ul>