

<b>Subject and Grade:</b>	<b>8th Grade Science</b>	<b>School Year:</b>	2023 - 2024
<b>Unit Title:</b>	<b>"How Do Forces Impact Me?"</b>	<b>Author/s:</b>	S. Lanning

<b>NYS Next Gen Learning Standards</b>	<b>Essential Question/Big Ideas</b>
<b>Module 8.2</b> MS- ESS1-2 MS-ESS1-3 MS-PS2-1 MS-PS2-2 MS-PS2-3 MS-PS2-4 MS-PS2-5 MS-ETS1-1 MS-PS3-1 MS-PS3-2 MS-ETS1-1 MS-ETS1-2 MS-ETS1-3 Ms-ETS1-4	<ul style="list-style-type: none"> <li>• What is a force?</li> <li>• What forces act throughout a system?</li> <li>• How strong is that force?</li> <li>• Why do objects start moving?</li> <li>• Why does an object stop moving?</li> <li>• Why does something change speed or direction?</li> <li>• How can we describe how an object moves?</li> <li>• How can we use forces and energy to explain the magnetic cannon?</li> <li>• Designing the best electromagnet.</li> </ul>

<b>Brief Unit Summary</b>	<b>Content Vocabulary</b>
Investigative Phenomena includes investigating forces through manipulation of four devices to determine how forces work in each one. Students construct models and force pair diagrams to show the four devices' interactions, explain how the contact forces work, and explain the causes and effects of force in each device.	Acceleration Attractive Force Balanced Forces Collide/Collision Compression Contact Force Counteract Electrical Force Energy Energy Transfer

	Forces Forces that act a distance Free-body diagram Gram Gravitational energy Gravitational force Horizontal force Interact/interaction Kinetic energy Magnetic force Magnitude Mass Net force Recoil Reinforce Impulsive force System components Tides Unbalanced forces Velocity Vertical force
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Content Skills or Learning Targets	Assessments (Pre-Assessments, Formative, and Summative)	Timeframe
1. Asking questions and defining problems 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations and designing solutions 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information	<ul style="list-style-type: none"> <li>• Handouts</li> <li>• Group activities</li> <li>• Lab Experiments</li> <li>• Readings</li> <li>• Activities</li> <li>• Quiz</li> <li>• Test</li> </ul>	September – Mid November ~8 Weeks

Differentiation/Enrichment	Materials	Resources
	4 state mandated Investigations will be interspersed through the year: “It’s Alive?” “Weather and Climate” “All Mixed Up” “Cool It”	southern cayuga.iqwst.com

<b>Subject and Grade:</b>	8th Grade Science	<b>School Year:</b>	2023 - 2024
<b>Unit Title:</b>	“How Do Living Things Change Over Time?”	<b>Author/s:</b>	S. Lanning

NYS Next Gen Learning Standards	Essential Question/Big Ideas
<b>Module 8.3</b> MS-LS3-1 MS-LS4-1 MS-LS4-2 MS-LS4-3 MS-LS4-4 MS-LS4-5 MS-LS4-6 MS-ESS1-4 MS-ETS1-2	<ul style="list-style-type: none"> <li>• Population Changes</li> <li>• Do Variations Between Individuals in a Population Matter?</li> <li>• The Finch Investigation</li> <li>• Can We Construct a General Model of Population Change?</li> <li>• Does the Natural Selection Model Apply to Other Populations?</li> <li>• How Does Natural Selection Happen Over Longer Periods of Time?</li> <li>• How Long Does Evolution Take?</li> <li>• How does Fossil Evidence Support Evolution?</li> <li>• Body Structures</li> <li>• How Old Are Fossils?</li> <li>• Artificial Selection</li> </ul>

<b>Brief Unit Summary</b>	<b>Content Vocabulary</b>
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<p>This module focuses on developing models in both life and Earth sciences and applying them consistently. Students explain how fossil records, homologous structures, and embryological development are used as evidence to support the theory of evolution. Students engage in a simulation of artificial selection using information about chicken breeds to explain how humans can effect changes in a population through artificial selection. The module concludes with a look at human intervention in population change in selective breeding and genetic modification of plants and animals.</p>	<p>Adaptations Analogous Antibiotic Bacteria Common ancestry Descendant Dominate Embryo Erosion Excavation Fault Fossil Frequency Homologous Inherited</p>
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Content Skills or Learning Targets	Assessments (Pre-Assessments, Formative, and Summative)	Timeframe
<ol style="list-style-type: none"> <li>1. Asking questions and defining problems</li> <li>2. Developing and using models</li> <li>3. Planning and carrying out investigations</li> <li>4. Analyzing and interpreting data</li> <li>5. Using mathematics and computational thinking</li> <li>6. Constructing explanations and designing solutions</li> <li>7. Engaging in argument from evidence</li> <li>8. Obtaining, evaluating, and communicating information</li> </ol>	<ul style="list-style-type: none"> <li>• Handouts</li> <li>• Group activities</li> <li>• Lab Experiments</li> <li>• Readings</li> <li>• Activities</li> <li>• Quiz</li> <li>• Test</li> </ul>	<p>Mid November – End of January ~ 8 weeks</p>

Differentiation/Enrichment	Materials	Resources
	4 state mandated Investigations will be	southerncayuga.iqwst.com

	interspersed through the year: “It’s Alive?” “Weather and Climate” “All Mixed Up” “Cool It”	
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<b>Subject and Grade:</b>	<b>8th Grade Science</b>	<b>School Year:</b>	2023 - 2024
<b>Unit Title:</b>	<b>“What Action Will You Take On Sustainability?”</b>	<b>Author/s:</b>	S. Lanning

<b>NYS Next Gen Learning Standards</b>	<b>Essential Question/Big Ideas</b>
<p><b>Module 8.4</b></p> <p>MS-ESS3-4 MS-ETS1-1 MS-ETS1-2</p>	How Do I Impact Earth’s Systems?

<b>Brief Unit Summary</b>	<b>Content Vocabulary</b>
<p>This capstone module provides students an opportunity to choose a topic that has interested them at any time during middle school and in which they have a passionate interest, they examine related issues that threaten sustainability, ultimately developing an action plan for change that begins with their own actions. The goal for this end-of-middle-school module is for students to develop an evidence-based argument to explain how direct and indirect changes to natural systems, due to issues related to human interaction (including population growth and increased consumption), influence those natural systems and how they can be a change agent.</p>	<p>Bearable Economic Sustainability Environmental Sustainability Equitable Social Sustainability Sustainability Viable</p>

Content Skills or Learning Targets	Assessments (Pre-Assessments, Formative, and Summative)	Timeframe
1. Asking questions and defining problems 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations and designing solutions 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information	<ul style="list-style-type: none"> <li>● Handouts</li> <li>● Group activities</li> <li>● Lab Experiments</li> <li>● Readings</li> <li>● Activities</li> <li>● Quiz</li> <li>● Test</li> </ul>	January – March ~ 8 Weeks

Differentiation/Enrichment	Materials	Resources
	4 state mandated Investigations will be interspersed through the year: “It’s Alive?” “Weather and Climate” “All Mixed Up” “Cool It”	southerncayuga.iqwst.com