

## Physical Science Subject Group Overview

Unit Name		Atomic Structure	Periodic Table and Chemical Reactions	Atomic and Molecular Motion	Energy	Forces & Motion	Waves	Electricity & Magnetism
Time Frame		4 Weeks	4 weeks	5 weeks	4 Weeks	5 Weeks	4 Weeks	5 Weeks
PHYSICAL SCIENCE:	Standards	SPS1.a.,b.,c.	SPS1.a.,b.,c. SPS2.a.,b.,c. SPS3.a.,b.	SPS5.a.,b. SPS6.a.,b.,c.,d.,e.	SPS4.a.,b.,c. SPS7.a.,b.,c.,d	SPS8.a.,b.,c.,d.	SPS7.a. SPS9.a.,b.,c.,d.,e.	SPS10.a.,b.,c.
	Approaches To Learning Instructional Strategies	SEP: <ul style="list-style-type: none"> <li>Analyze and interpret data</li> <li>Use the Periodic Table as a model</li> <li>Construct arguments and explanations</li> </ul> ATL: <ul style="list-style-type: none"> <li>Make inferences and draw conclusions</li> <li>Organize and depict information logically</li> </ul>	SEP: <ul style="list-style-type: none"> <li>Develop and use models</li> <li>Analyze and interpret data</li> <li>Use the Periodic Table as a model</li> <li>Use the International Union of Pure and Applied Chemistry (IUPAC)</li> <li>Plan and Carry out Investigations</li> </ul> ATL: <ul style="list-style-type: none"> <li>Structure information in summaries, essays, and reports</li> </ul>	SEP: <ul style="list-style-type: none"> <li>Ask Questions</li> <li>Plan and carry out investigations</li> <li>Develop and Use Models</li> <li>Analyze and Interpret Data</li> <li>Obtain and Communicate Information</li> </ul> ATL: <ul style="list-style-type: none"> <li>Make inferences and draw conclusions</li> <li>Collect, record, and verify data</li> <li>Practice analyzing and attributing causes for failure</li> </ul>	SEP: <ul style="list-style-type: none"> <li>Develop and use models</li> <li>Use mathematics and computational thinking</li> <li>Construct explanations</li> <li>Plan and carry out investigations</li> <li>Analyze and interpret data</li> </ul> ATL: <ul style="list-style-type: none"> <li>Make inferences and draw conclusions</li> <li>Collect, record, and verify data</li> </ul>	SEP: <ul style="list-style-type: none"> <li>Construct explanations</li> <li>Plan and carry out investigations</li> <li>Analyze and interpret data</li> <li>Use mathematics and computational thinking</li> <li>NOS Connection: Science models, Laws, and Mechanisms, and Theories Explain Natural Phenomena</li> </ul> ATL: <ul style="list-style-type: none"> <li>Organize and depict information logically</li> <li>Make inferences and draw conclusions</li> <li>Collect, record, and verify data</li> <li>Practice analyzing and attributing causes for failure</li> <li>Critical Thinking</li> </ul>	SEP: <ul style="list-style-type: none"> <li>Analyze and interpret data</li> <li>Ask questions</li> <li>Develop and use models</li> </ul> ATL: <ul style="list-style-type: none"> <li>Use models and simulations to explore complex systems and issues</li> <li>Collect, record, and verify data</li> </ul>	SEP: <ul style="list-style-type: none"> <li>Construct explanations</li> <li>Use mathematical and computational thinking</li> <li>Develop and use models</li> <li>Plan and carry out investigations</li> </ul> ATL: <ul style="list-style-type: none"> <li>Use models and simulations to explore complex systems and issues</li> <li>Analyze complex concepts and synthesize to create new understanding</li> </ul>
	Statement of Inquiry	Scientific and technical advancements have enabled scientists to identify, model, and discover interactions, patterns, and relationships that exist between the natural world and human societies. <b>Phenomenon:</b>	Scientific and technical advancements have enabled scientists to identify, model, and discover interactions, patterns, and relationships that exist between the natural world and human societies. <b>Phenomenon:</b>	Scientific and technological modeling allow for identification of changes to systems to identify relationships.  <b>Phenomena:</b> How can you explain the implosion of the	Scientific and technological innovations allow us to observe, investigate, and analyze the movement and transfer of energy between systems in order to design products with desired features.  <b>Phenomena:</b>	Scientific and technological modeling allow for identification of consequences and effects of movement to identify relationships.  <b>Phenomena:</b>	Modeling allows us to examine patterns and changes in wave behavior in order to identify relationships between energy, frequency, wavelength, and amplitude.	Advances in science and technology have allowed humans to design systems that harness the energy and identify the relationship between electricity and magnetism.  <b>Phenomena:</b> Gravity, magnetism, electricity, and electromagnetism are used in designed systems.

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Resources, materials, assessments not linked to SGO or unit planner will be reviewed at the local school level.

[MCS Science Resources](#)

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	<b>Statement of Inquiry and Phenomenon</b>	How can you use carbon dating to estimate the age of organisms?	Changes to the chemistry of Flint Michigan’s water supply created dangerous levels of lead in the drinking level. Students will explore the chemistry behind the removal of lead from homes and drinking water.  This Old House Video: Removal of Lead Paint	gas tanker using gas laws?	<b>Candles can be used to power a toy car.</b>  Nuclear Fission & Fusion - Nuclear Applications There is a great deal of energy stored in the nucleus of an atom that can be harnessed for electrical power production but the use of nuclear power does come with risks.  Chernobyl Video	The swirling motion continues even after you have stopped stirring your coffee or tea.  How do seatbelts and airbags make use of Newton’s Laws to prevent serious injury?  Changes in limb posture affect muscle forces by altering the mechanical advantage of the ground reaction force	<b>Phenomena:</b> The pitch of a siren appears to change as it moves toward or away from the observer.	
	<b>Global Context</b>	Scientific and technical innovation	Scientific and technical innovation	Scientific and technical innovation	Scientific and technical innovation	Scientific and technical innovation	Identities and relationships	Scientific and technical innovation
	<b>Key Concepts</b>	Relationships (MYP) Change (MYP/CC)	Change (CC) Relationships (MYP) Systems (CC)	Change (CC) Relationships (MYP) Systems (CC)	Systems (MYP/CC)	Patterns (CC) Relationships (MYP) Systems (CC)	Change (MYP)	Systems (CC) Relationships (MYP)
	<b>Related Concepts</b>	Energy (MYP/CC) Interactions (MYP) Patterns (MYP/CC) Models (MYP/CC) Structure and Function (MYP/CC) Transformation (MYP) Balance (MYP)	Energy (MYP/CC) Interactions (MYP) Patterns (MYP/CC) Models (MYP/CC) Transformation (MYP) Balance (MYP)	Energy (MYP/CC) Interactions (MYP) Movement (MYP/CC) Models (MYP/CC)	Energy (MYP/CC) Movement (MYP/CC)	Consequences/Cause and Effect (MYP/CC) Movement (MYP)	Energy (MYP/CC) Patterns (MYP/CC)	Energy (MYP/CC)
	<b>MYP Assessments Performance Tasks</b>	<b>Common Assessments (formative and summative)</b>  <b>Title and Criterion:</b> Properties of Matter Unit Assessment (A)	<b>Common Assessments (formative and summative)</b>  <b>Title and Criterion:</b> Properties of Ionic and Covalent Compounds Lab (B,C) Chemical Reactions Unit Assessment (A, D)	<b>Common Assessments (formative and summative)</b>  <b>Title and Criterion:</b> Thermal Energy Lab - SOM (B,C) Gas Laws Lab (B,C) Solutions Lab (B,C) Acids/Bases Lab (B,C)	<b>Common Assessments (formative and summative)</b>  <b>Title and Criterion:</b> Energy Unit Assessment (A,D) Nuclear Assessment (A, D) Thermal Energy Lab - CCR (B,C)	<b>Common Assessments (formative and summative)</b>  <b>Title and Criterion:</b> Forces & Motion Unit Assessment (A,D) Motion Lab (B,C)	<b>Common Assessments (formative and summative)</b>  <b>Title and Criterion:</b> Waves Unit Assessment (A) Slinky Lab (B, C)	<b>Common Assessments (formative and summative)</b>  <b>Title and Criterion:</b> Electricity & Magnetism Unit Assessment (A,D) Circuits Lab (B,C) Electricity and Magnetism Lab (B,C)

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					Specific Heat Lab (B,C)			
	Differentiation For Tiered Learners	SWD/504 – Accommodations Provided ELL – Reading & Vocabulary Support Gifted – Extensions/ Enrichment Tasks/Projects	SWD/504 – Accommodations Provided ELL – Reading & Vocabulary Support Gifted-Extensions/Enri chment/Tasks/Projects	SWD/504- Accommodations Provided ELL - Reading and Vocabulary Support Gifted-Extensions/Enri chment/Tasks/Projects	SWD/504 – Accommodations Provided ELL – Reading and Vocabulary Support Gifted – Extensions/Enrichment Tasks/Projects	SWD/504 – Accommodations Provided ELL – Reading & Vocabulary Support Gifted - Extensions/Enrichment Tasks/Projects	SWD/504 – Accommodations Provided ELL – Reading & Vocabulary Support Gifted - Extensions/Enrichme nt Tasks/Projects	SWD/504 – Accommodations Provided ELL – Reading and Vocabulary Support Gifted – Extensions/Enrichment Tasks/Projects