Unit Name	Properties of Matter	Atomic Structure & Periodic Table	Principles of Atomic Bonding	Chemical Reactions	Solutions, Acids, and Bases	Nuclear Chemistry	Energy	Forces & Motion	Waves	Electricity & Magnetism
Time Frame	3.5 Weeks	4 Weeks	3 Weeks	3 Weeks	3.5 Weeks	3 weeks	3 Weeks	4 Weeks	3 Weeks	3 Weeks
Standards	SPS5.a., b. SPS7. d.	SPS1.a., b., c.	SPS1.a. SPS2.a., b., c.	SPS3. a., b.	SPS6.a., b., c., d., e.	SPS1.a SPS4. a., b., c.	SPS7.a., b., c.	SPS8.a., b., c., d.	SPS9.a., b., c., d., e.	SPS10. a., b., c.
Gifted Standards	S1A, S1B, S4A	S2A, S4D, S2D	S1C, S2B, S2D, S5E	S4D, S6A, S2D	S1C, S2B, S2D, S5E	S4D, S4E	S3A, S3C, S5A, S6A,	S5B, S5C, S6C, S6D	S4B, S4C, S4E, S5D	S2C, S3B, S6E
Science & Engineering Practices	Science & Engineering Practices Students will:  Ask questions to compare and contrast models depicting the particle arrangement and motion in solids, liquids, gasses, and plasma.  Plan and carry out investigations to identify the relationships between temperature, pressure, volume, and density of gasses in closed systems.  Analyze and interpret data to explain the flow of energy during phase changes	Science & Engineering Practices Students will:  Develop and use models to compare and contrast the structure of atoms, ions, and isotopes.  Analyze and interpret data to determine trends.  Use the Periodic Table as a model to predict the above properties of main element groups.	Science & Engineering Practices Students will:  Develop and use models to compare and contrast the structure of atoms, ions, and isotopes.  Analyze and interpret data to predict properties of ionic and covalent compounds.  Develop and use models to predict formulas for stable, binary ionic compounds based on balance of	Science & Engineering Practices Students will:  Plan and carry out investigation s to generate evidence supporting the claim that mass is conserved during a chemical reaction.  Develop and use a model of a chemical equation to illustrate how the total number of atoms is conserved during a chemical equation to illustrate how the	Science & Engineering Practices Students will:  Develop and use models to explain the properties (solute/solven t, conductivity, and concentration) of solutions.  Plan and carry out investigations to determine how temperature, surface area, and agitation affect the rate solutes dissolve in a specific solvent.  Analyze and	Science & Engineering Practices Students will:  Develop and use models to compare and contrast the structure of atoms, ions, and isotopes.  Develop a model that illustrates how the nucleus changes as a result of fission and fusion.  Use mathematics and computationa I thinking to explain the process of	Science & Engineering Practices Students will:  Construct explanations for energy transformations within a system.  Plan and carry out investigations to describe how molecular motion relates to thermal energy changes in terms of conduction, convection, and radiation.  Analyze and interpret	out an investigation to analyze the motion of an object using mathematical and graphical models.  • Construct an explanation based on experimental evidence to support the claims presented in Newton's three laws of motion.  • Analyze and interpret data to identify	Science & Engineering Practices Students will:  Analyze and interpret data to identify the relationships among wavelength, frequency, and energy in electromagneti c waves and amplitude and energy in mechanical waves.  Ask questions to compare and contrast the characteristic s of electromagne tic and mechanical	Science & Engineering Practices Students will:  Use mathematical and computational thinking to support a claim regarding relationships among voltage, current, and resistance.  Develop and use models to illustrate and explain the conventional flow (direct and alternating) of current and the flow of electrons in simple series and parallel circuits.  Plan and carry out investigations
	using heating/cooling curves.		charges.  Use the International Union of Pure and Applied	reaction.	interpret data from a solubility curve to determine the	half-life as it relates to radioactive decay.	specific heat data to justify the selection of a material for a practical	the relationship between mass and gravitational	waves.  Develop models based on experimental	to determine the relationship between magnetism and

	Chemistry	effect of	• Co	onstruct	application	force for		evidence that	the movement of
	(IUPAC)	temperature	1	guments	(e.g.,	falling		illustrates the	electrical charge.
	nomenclature	on solubility.		ased on	insulators and	objects.		phenomena	
	for translating	Obtain and	1	/idence	cooking	Use		of reflection,	
	between	communicate	1	out the	vessels).	mathematics		refraction,	
	chemical names	information to	1	plications,	1 2332.37.	and		interference,	
	and chemical	explain the		enefits, and		computationa		and	
	formulas.	relationship	1	oblems of		I thinking to		diffraction.	
	Torritaids.	between the		uclear		identify the		Analyze and	
		structure and	1	nergy as an		relationships	`	interpret data	
		properties		ternative		between		to explain	
		(e.g., pH, and	1	nergy		work,		how different	
		color change	1	ource.		mechanical		media affect	
		in the	30	ource.		advantage,		the speed	
		presence of an				and simple		and sound of	
		indicator) of				machines.		light waves.	
		acids and				macinies.		Develop and	
		bases.					•	use models to	
		<ul><li>Plan and carry</li></ul>						explain the	
		out							
								changes in sound waves	
		investigations							
		to detect						associated with the	
		patterns in order to							
								Doppler	
		classify						effect.	
		common							
		household							
		substances as							
		acidic, basic,							
		or neutral.	<u> </u>						

Approaches To Learning Instructional Strategies	Self- Management: Organization: Bring necessary equipment and supplies to class.  Communication: Take effective notes in class.	Communication: Organize and depict information logically.	Self- Management: Affective Practice focus and concentration	Communication: Make inferences and draw conclusions.	Critical Thinking: Identify trends and forecast possibilities	Critical Thinking: Make logical, reasonable judgments and create arguments to support them.	Critical Thinking: Consider consequences to events.	Research: Collect and analyze data to identify solutions and/or make informed decisions.  Critical Thinking: Use models and simulations to explore complex systems and issues.	Communication: Negotiate ideas and knowledge with peers and teachers.	Collaboration: Work effectively with others.
Statement of Inquiry	Scientific and technical advancements have led to the development of models to make sense of changes in systems.  Phenomena: How can we use our understanding of particle arrangement	Scientific and technical advancements have enabled scientists to understand relationships and patterns that exist related to the structure and function of elements in our natural world.	Scientific and technical advancements have enabled scientists to understand the relationships and interactions between elements that are necessary for the creation of compounds.  Phenomena: How can we use	Scientific and technical innovations allow us to visualize, model, and explain the balanced changes that occur in systems of matter during chemical reactions.	Scientific and technical innovations use the relationships and interactions between substances to create new solutions and products with specific properties.	Scientific and technical innovations help us to model changes in the nuclei that can be harnessed as sources of energy.	Scientific and technical innovations allow us to observe and measure thermal energy and the transfer of heat between systems in order to design products with desired features.	Advances in science and technology have furthered humans' understanding of the relationship between forces, mass, and motion (velocity and acceleration) in systems.	Models allow us to examine patterns 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 make use of the movement of electrons and harness the relationship between electricity and magnetism.
	and Gas Laws to explain why certain objects can explode due to different temperatures or altitudes?	Phenomena: How can we use our understanding of the organization	our understanding of ionic and covalent bonding to justify the use of sport drinks for athletes?	Phenomenon: How can we use our understanding of	Phenomenon: How can we use our understanding of solutions, acids, bases, and pH level to help pH	Phenomena: How can we use our understanding of fission and fusion to determine and	Phenomena: How can our understanding of energy transformations and specific heat data impact the	Phenomena: How can we use our understanding of Newton's Laws, Work, and Simple Machines to	Phenomena: How can we use our understanding of electromagnetic and mechanical waves to explain	Phenomena: How can we use our understanding of circuits, electrical current, and magnetism to develop an

CER: Students answer the phenomenon in a Claim-Evidence-Reaso ning constructed response as a formative or summative assessment.	table and atomic	CER: Students answer the phenomenon in a Claim-Evidence-Reas oning constructed response as a formative or summative assessment.	chemical reactions and LOCOM to develop a flameless heating source for cooking?  CER: Students answer the phenomenon in a Claim-Evidence-R easoning constructed response as a formative or summative assessment.	be used to determine whether a wound is healing properly?  CER: Students answer the phenomenon in a Claim-Evidence-R easoning constructed response as a formative or summative assessment.	justify if nuclear power is a viable alternative energy source?  CER: Students answer the phenomenon in a Claim-Evidence-Re asoning constructed response as a formative or summative assessment.	design and selection of products for everyday use?  CER: Students answer the phenomenon in a Claim-Evidence-Re asoning constructed response as a formative or summative assessment.	evaluate the mechanical advantage of common tools?  CER: Students answer the phenomenon in a Claim-Evidence-Rea soning constructed response as a formative or summative assessment.	how wave behaviors impact our ability to observe matter around us?  CER: Students answer the phenomenon in a Claim-Evidence-Re asoning constructed response as a formative or summative assessment.	appropriate device for a given function?  CER: Students answer the phenomenon in a Claim-Evidence-Reaso ning constructed response as a formative or summative assessment.

Global	Scientific and	Scientific and	Scientific and	Scientific and	Scientific and	Scientific and	Scientific and	Scientific and	Scientific and	Scientific and
Context	Technical Innovation	Technical	Technical	Technical	Technical	Technical	Technical	Technical	Technical	Technical Innovation
	Students will explore	Innovation	Innovation	Innovation	Innovation	Innovation	Innovation	Innovation	Innovation	Students will explore
	the natural world	Students will	Students will	Students will	Students will	Students will	Students will	Students will	Students will	the natural world
	and its laws; the	explore the	explore the natural	explore the	and its laws; the					
	interaction between	natural world and	world and its laws;	natural world	natural world	natural world and	natural world and	natural world and	natural world and	interaction between
	people and the	its laws; the	the interaction	and its laws; the	and its laws; the	its laws; the	its laws; the	its laws; the	its laws; the	people and the
	natural world; how	interaction	between people	interaction	interaction	interaction	interaction	interaction	interaction	natural world; how
	humans use their	between people	and the natural	between people	humans use their					
	understanding of	and the natural	world; how humans	and the natural	understanding of					
	scientific principles;	world; how	use their	world; how	scientific principles;					
	the impact of	humans use their	understanding of	humans use	humans use their	the impact of				
	scientific and	understanding of	scientific principles;	their	understanding of	scientific and				
	technological	scientific	the impact of	understanding of	scientific	scientific	scientific	scientific	scientific	technological
	advances on	principles; the	scientific and	scientific	principles; the	advances on				
	communities and	impact of scientific	technological	principles; the	impact of	communities and				
	environments; the	and technological	advances on	impact of	scientific and	environments; the				
	impact of	advances on	communities and	scientific and	technological	technological	technological	technological	technological	impact of
	environments on	communities and	environments; the	technological	advances on	environments on				
	human activity; how	environments; the	impact of	advances on	communities and	human activity; how				
	humans adapt	impact of	environments on	communities	environments;	environments;	environments;	environments; the	environments;	humans adapt
	environments to	environments on	human activity;	and	the impact of	the impact of	the impact of	impact of	the impact of	environments to
	their needs.	human activity;	how humans adapt	environments;	environments on	their needs.				
		how humans	environments to	the impact of	human activity;					
		adapt	their needs.	environments on	how humans					
		environments to		human activity;	adapt	adapt	adapt	adapt	adapt	
		their needs.		how humans	environments to					
				adapt	their needs.					
				environments to						
				their needs.						

Key Concepts	Systems and system models (MYP/CCC)	Relationships (MYP)	Relationships (MYP)	Systems and system models	Relationships (MYP)	Change (MYP/CCC)	Systems and system models	Relationships (MYP)	Relationships (MYP)	Systems and system models (MYP/CCC)
-	Systems are sets of	Relationships are	Relationships are	(MYP/CCC)	Relationships are	Change is a	(MYP/CCC)	Relationships are	Relationships are	Systems are sets of
	interacting or	the connections	the connections	Systems are sets	the connections	conversion,	Systems are sets	the connections	the connections	interacting or
	interdependent	and associations	and associations	of interacting or	and associations	transformation or	of interacting or	and associations	and associations	interdependent
	components.	between	between	interdependent	between	movement from	interdependent	between	between	components.
	Systems provide	properties,	properties, objects,	components.	properties,	one form, state,	components.	properties,	properties,	Systems provide
	structure and order	objects, people	people and ideas -	Systems provide	objects, people	or value to	Systems provide	objects, people	objects, people	structure and order
	in human, natural	and ideas -	including the	structure and	and ideas -	another. Inquiry	structure and	and ideas -	and ideas -	in human, natural
	and built	including the	human	order in human,	including the	into the concept	order in human,	including the	including the	and built
	environments.	human	community's	natural and built	human	of change	natural and built	human	human	environments.
	Systems can be static	community's	connections with	environments.	community's	involves	environments.	community's	community's	Systems can be static
	or dynamic, simple	connections with	the world in which	Systems can be	connections with	understanding	Systems can be	connections with	connections with	or dynamic, simple
	or complex.	the world in which	we live. Any	static or	the world in	and evaluating	static or dynamic,	the world in which	the world in	or complex.
		we live. Any	change in a	dynamic, simple	which we live.	causes, processes	simple or	we live. Any	which we live.	
		change in a	relationship brings	or complex.	Any change in a	and	complex.	change in a	Any change in a	
		relationship brings	consequences.		relationship	consequences.		relationship brings	relationship	
		consequences.			brings			consequences.	brings	
					consequences.				consequences.	
Related Concepts	Transformation (MYP)	Patterns (MYP/CCC)	Interactions (MYP)	Balance (MYP)	Interactions (MYP)	Energy (MYP/CC) Models (MYP/CC)	Energy (MYP/CC) Transformation	Movement (MYP)	Models (MYP/CC)	Movement (MYP/CC)
·		Structure & Function (MYP/CC)				, , ,	(MYP/CC)			

Disciplinar	Connecting Core	Connecting Core	Connecting Core	Connecting Core	Connecting Core	Connecting Core	Connecting Core	Connecting Core	Connecting Core	Connecting Core
y Core	<u>Ideas</u>	<u>Ideas</u>	Ideas	<u>Ideas</u>	Ideas	Ideas	Ideas	<u>Ideas</u>	Ideas	Ideas
Ideas	<ul> <li>Atomic and molecular motion</li> <li>Heating/cooling curves</li> <li>Gas Laws</li> </ul>	<ul> <li>Structure of atoms and elements</li> <li>Periodic Table trends</li> </ul>	<ul> <li>Structure of atoms and elements</li> <li>Periodic Table trends</li> <li>Compounds: properties, bonds, and naming</li> </ul>	<ul> <li>Atomic and molecular motion</li> <li>Compounds: naming and writing formulas</li> <li>Conservation of matter</li> </ul>	<ul> <li>Solutions</li> <li>Acids and bases</li> </ul>	<ul> <li>Nuclear energy</li> <li>Fission and fusion</li> <li>Radioactive decay</li> <li>Energy transformati ons</li> </ul>	<ul> <li>Energy</li> <li>Thermal energy</li> <li>Heat</li> <li>Conduction, Convection, Radiation</li> <li>Specific Heat</li> <li>Energy transformations</li> </ul>	<ul> <li>Forces and motion</li> <li>Newton's Laws</li> <li>Simple Machines</li> <li>Gravitational force</li> <li>Energy</li> <li>Energy transformations</li> </ul>	<ul> <li>Electromagn etic and mechanical waves</li> <li>Reflection, refraction, interference, and diffraction</li> <li>Doppler effect</li> <li>Energy</li> <li>Energy</li> <li>Transformations</li> </ul>	<ul> <li>Electricity and magnetism</li> <li>Energy transformations</li> </ul>
MYP	Common	Common	Common	Common	Common	Common	Common	Common	Common	Common
Assessments	Assessments Title	Assessments Title	Assessments Title	Assessments	Assessments	Assessments	Assessments	Assessments Title	Assessments	Assessments Title
/	and Criterion:	and Criterion:	and Criterion:	Title and	Title and	Title and	Title and	and Criterion:	Title and	and Criterion:
Performance				Criterion:	Criterion:	Criterion:	Criterion:		Criterion:	
Tasks	Properties of Matter	Atomic Structure	Principles of Atomic					Forces & Motion		Electricity &
	Unit Assessment	and Periodic Table	Bonding Unit	Chemical	Solutions, Acids,	Nuclear	Energy Unit	Unit Assessment	Waves Unit	Magnetism Unit
	Paper I and Paper II	Unit Assessment	Assessment Paper I	Reactions Unit	and Bases Unit	Chemistry Unit	Assessment	(Science: A,D)	Assessment	Assessment Paper I
	(Science: A,D)	Paper I and Paper	and Paper II	Assessment	Assessment	Assessment	Paper I and Paper		Paper I and Paper	(Science: A,D)
		II (Science: A,D)	(Science: A,D)	Paper I and	Paper I (Science:	Paper I and Paper	II (Science: A,D)	Lab: Exploring	II (Science: A, D)	
	Lab: Investigating			Paper II	A,D)	II (Science: A,D)		Motion Using		Designing An
	Density (Science:	Research:	Lab: Elements vs.	(Science: A, D)			Designing a	Ticker Tape	Elaboration:	Electromagnet
	A,C,D)	Analyzing PT	Compounds		Lab: Factors that	Lab: Half-Life	Device for Rescue	(Science: A,C,D)	Wave Behavior	(Design: A-D)
		Groups (Science:	(Science: A, C,D)	Lab:	Affect Solubility	Simulation	Workers (Design:		Scenarios	
	Lab: Investigating Gas	A,C,D)		Investigating &	(Science: A-D)	(Science: A-D)	A-D)	Work &	(Science: A,D)	
	Laws Using Syringes		Lab: Mystery	Identifying				Calculating	·	
	(Science: A,C,D)	Elaboration:	Substances	Chemical	Lab: Identifying	Debate: Nuclear	Lab: Thermal	Mechanical	Research: EM	
	· ·	Investigating	Investigation	Reactions	Acids/Bases	Energy Debate	Transfer (Science:	Advantage Unit	Spectrum Device	
		Mendeleev's Table	(Science: A-D)	(Science: A,C,D)	(Science: A-D)	(Science: A,D)	A-D)	Assessment	Research Activity	
		(Science: A,C,D)	·		·			(Science: A,D)	(Science: A,C,D)	
				Designing a Flameless						

				Heating Unit (Design: A-D)				Lab: Calculating Mechanical Advantage Using Simple Machines (Science: A,C,D)		
Differentiation	Discovery Education	Discovery	Discovery	Discovery	Discovery	Discovery	Discovery	Discovery	Discovery	Discovery Education
For Tiered	Science Techbook	Education Science	Education Science	Education	Education	Education Science	Education Science	Education Science	Education	Science Techbook
Learners		Techbook	Techbook	Science	Science	Techbook	Techbook	Techbook	Science Techbook	
	NGSS Case Studies			Techbook	Techbook					NGSS Case Studies
	for Differentiated	NGSS Case Studies	NGSS Case Studies			NGSS Case	NGSS Case	NGSS Case Studies	NGSS Case	for Differentiated
	Learners	for Differentiated	for Differentiated	NGSS Case	NGSS Case	Studies for	Studies for	for Differentiated	Studies for	Learners
		Learners	Learners	Studies for	Studies for	Differentiated	Differentiated	Learners	Differentiated	
	NGSS: All Standards,			Differentiated	Differentiated	Learners	Learners		Learners	NGSS: All Standards,
	All Students	NGSS: All	NGSS: All	Learners	Learners			NGSS: All		All Students
		Standards, All	Standards, All			NGSS: All	NGSS: All	Standards, All	NGSS: All	
	Extensions -	Students	Students	NGSS: All	NGSS: All	Standards, All	Standards, All	Students	Standards, All	Extensions -
	Enrichment			Standards, All	Standards, All	Students	Students		Students	Enrichment
	Tasks/Projects	Extensions -	Extensions -	Students	Students			Extensions -		Tasks/Projects
		Enrichment	Enrichment			Extensions -	Extensions -	Enrichment	Extensions -	
		Tasks/Projects	Tasks/Projects	Extensions -	Extensions -	Enrichment	Enrichment	Tasks/Projects	Enrichment	
				Enrichment	Enrichment	Tasks/Projects	Tasks/Projects		Tasks/Projects	
				Tasks/Projects	Tasks/Projects					