neering tices	4 Weeks SPS1.a., b., c. S2A, S4D, S2D Science & Engineering Practices Students will: Develop and use models to compare and	3 Weeks SPS1.a. SPS2.a., b., c. S1C, S2B, S2D, S5E Science & Engineering Practices Students will: Develop	2 Weeks SPS3. a., b. S4D, S6A, S2D Science & Engineering Practices Students will:	3.5 Weeks SPS6.a., b., c., d., e. S1C, S2B, S2D, S5E Science & Engineering Practices	3 weeks SPS1.a SPS4. a., b., c. S4D, S4E Science & Engineering	1.5 Weeks SPS7.a., b., c. S3A, S3C, S5A, S6A, Science &	4 Weeks SPS8.a., b., c., d. S5B, S5C, S6C, S6D Science &	3.5 Weeks SPS9.a., b., c., d., e. S4B, S4C, S4E, S5D Science &	2.5 Weeks SPS10. a., b., c. S2C, S3B, S6E Science &
SPS7. d. A, S1B, S4A nce & neering tices lents will: Ask questions to compare and	S2A, S4D, S2D Science & Engineering Practices Students will: Develop and use models to	SPS2.a., b., c. S1C, S2B, S2D, S5E Science & Engineering Practices Students will: • Develop	S4D, S6A, S2D Science & Engineering Practices	d., e. S1C, S2B, S2D, S5E Science & Engineering	SPS4. a., b., c. S4D, S4E Science &	S3A, S3C, S5A, S6A, Science &	S5B, S5C, S6C, S6D Science &	d., e. S4B, S4C, S4E, S5D	S2C, S3B, S6E
nce & neering tices lents will: Ask questions to compare and	Science & Engineering Practices Students will: Develop and use models to	S1C, S2B, S2D, S5E Science & Engineering Practices Students will: • Develop	Science & Engineering Practices	S1C, S2B, S2D, S5E Science & Engineering	S4D, S4E Science &	S6A, Science &	Science &		
neering tices lents will: Ask questions to compare and	Engineering Practices Students will: Develop and use models to	Engineering Practices Students will: Develop	Engineering Practices	Engineering				Science &	Science 9
nodels depicting the particle arrangement and motion a solids, iquids, gasses, and plasma. Plan and carry out anvestigation as to dentify the elationship between emperature pressure,	contrast the structure of atoms, ions, and isotopes.	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 compound s.	 Plan and carry out investigations 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 	Students will: Develop and use models to explain the properties (solute/solve nt, conductivity, and concentratio n) of solutions. Plan and carry out investigation s to determine how temperature , surface area, and agitation	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	Engineering Practices Students will: Construct explanations for energy transformati ons within a system. Plan and carry out investigation s to describe how molecular motion relates to thermal energy changes in terms of conduction, convection, and radiation.	Engineering Practices Students will: Plan and carry 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	Engineering Practices Students will: Analyze and interpret data to identify the relationships among wavelength, frequency, and energy in electromagn etic waves and amplitude and energy in mechanical waves. Ask questions to compare and	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
gassiblasiblasi Plan Plan Plan Plan Plan Plan Plan Plan	es, and ma. and y out stigatio tify the cionship tween perature	Use the Periodic Table as a model to predict the above properties of main element groups. tify the cionship tween perature ssure, me, and sity of	Use the Periodic Table as a model to predict the above properties of main element groups. Itify the cionship tween perature ssure, me, and city of Use the Periodic Table as a model interpret data to predict properties of ionic and covalent compound s. Develop and use	 Use the Periodic Table as a model to predict the above properties of main element groups. Analyze and interpret data to predict properties of ionic and covalent compound sity of Develop and use reaction. Develop and use a model of a chemical equation to illustrate how the total number of atoms is conserved during a chemical reaction. 	 Use the Periodic Table as a model to predict the above properties of main element groups. 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Develop and use a model of a chemical and carry out investigation s to determine how temperature atoms is compound agitation affect the rate solutes 	Use the Periodic Table as a model to predict the above properties of main element groups. • Analyze and to predict the above properties of main element groups. • Analyze and interpret data to predict properties of ionic and covalent compound ssure, me, and gitty of • Develop and use a model of a chemical equation to illustrate how the total number of atoms is compound s. • Develop and use a model of a chemical equation to illustrate how the total number of atoms is compound agitation agitation affect the process of half-life as it	Use the Periodic Table as a model to predict the above properties of main element groups. • Use the Periodic Table as a model to predict the above properties of ionic ionship tween perature ssure, me, and officity of • Develop and use a model of a chemical equation to predict properties of ionic and the total compound sity of • Develop and use a model of a chemical equation to illustrate how the total number of atoms is conserved area, and agitation affect the process of and use • Develop and use reaction. • Develop and use a model of a chemical investigation solutions. • Develop and use solutions. • Plan and carry out investigation solutions. • Plan and carry out investigation solutions. • Develop and use solutions. • Plan and carry out investigation solutions. • Use mathematics and terms of conduction, convection, and significant agitation affect the process of and interpret	Use the Periodic Table as a model to predict the above properties of main element groups. Table as a model to predict the above properties of main element groups. Table as a model to predict the above properties of main element groups. Table as a model to predict the above properties of ionic and covalent compound sity of Table as a model to predict the above properties of ionic and covalent groups. Table as a model to predict the above properties of ionic and covalent compound sity of Table as a model to predict the above properties of interpret data to predict properties of ionic and covalent compound s. Table as a model to predict the above properties of interpret data to predict properties of ionic and covalent compound s. Table as a model to predict the above properties of interpret data to predict properties of ionic and covalent compound s. Table as a model to predict the above properties of main element groups. Table as a model to predict the above properties of main element groups. Table as a model to predict the above properties of main element groups. 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closed	predict formulas	specific	radioactive	data to	between	tics of	and parallel
systems.		solvent.	decay.	justify the	mass and	electromag	circuits.
	for stable,	Analyze and	Construct	selection of	gravitational	netic and	Plan and carry
	binary ionic	interpret	arguments	a material	force for	mechanical	out
	compound	data from a	based on	for a	falling	waves.	investigations
	s based on	solubility	evidence	practical	objects.	Develop	to determine
	balance of	curve to	about the	application	• Use	models	the
	charges.	determine	applications,	(e.g.,	mathematics	based on	relationship
	Use the	the effect of	benefits, and	insulators	and	experiment	between
	Internation	temperature	problems of	and cooking	computation	al evidence	magnetism
	al Union of	on solubility.	nuclear	vessels).	al thinking to	that	and the
	Pure and	 Obtain and 	energy as an	Analyze and	identify the	illustrates	movement of
	Applied	communicat	alternative	interpret	relationships	the	electrical
	Chemistry	e	energy	data to	between	phenomen	charge.
	(IUPAC)	information	source.	explain the	work,	a of	
	nomenclat	to explain		flow of	mechanical	reflection,	
	ure for	the		energy	advantage,	refraction,	
	translating	relationship		during phase	and simple	interferenc	
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	chemical	properties		ing curves.		and	
	formulas.	(e.g., pH,				interpret	
		and color				data to	
		change in				explain	
		the presence				how	
		of an				different	
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		acids and				affect the	
		bases.				speed and	
		Plan and				sound of	
		carry out				light	
		investigation				waves.	
		s to detect				 Develop 	
		patterns in				and use	
		order to				models to	
		classify				explain the	
		common				changes in	
		household				sound	
		substances				waves	

					as acidic, basic, or neutral.				associated with the Doppler effect.	
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.	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	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	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	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

		for the		specific		products with			electricity and
		creation of		properties.		desired features.			magnetism.
		compounds.							
Phenomena:	Phenomena:	Phenomena:	Phenomenon:	Phenomenon:	Phenomena:		Phenomena:	Phenomena:	
What effect	How can I	Why is NaCl so	How do atoms	How can pH be	Is nuclear power	Phenomena:	How do seatbelts	Why does the	Phenomena:
does changes	understand an	different from	rearrange to form	used to	a viable	How does	and air bags make	pitch of a siren	How can I develop
in altitude	element's	Na and Cl?	new substances?	determine	alternative	turning on the	use of Newton's	appear to	an appropriate
have on the	properties by using			whether a	energy source?	classroom lights	Laws to prevent	change as it	circuit for a given
behavior of	the periodic table?		How do we use	wound is		represent	serious injury?	moves	function?
gasses?			elements and	healing	CER: Students	energy		closer/farther	
			compounds to	properly?	answer the	transformations	CER: Students	away?	CER: Students
CER: Students	CER: Students	CER: Students	make a rocket		phenomenon in a	?	answer the		answer the
answer the	answer the	answer the	operate?	CER: Students	Claim-Evidence-Re		phenomenon in a	CER: Students	phenomenon in a
phenomenon in	phenomenon in a	phenomenon in		answer the	asoning	How does	Claim-Evidence-Re	answer the	Claim-Evidence-Re
a	Claim-Evidence-Reaso		CER: Students	phenomenon in	constructed	specific heat	asoning	phenomenon in	asoning
Claim-Evidence-I	ning constructed	Claim-Evidence-R		a	response as a	data impact the	constructed	a	constructed
easoning	response as a	easoning	phenomenon in a	Claim-Evidence-	formative	design and	response as a	Claim-Evidence-	response as a
constructed	formative	constructed	Claim-Evidence-Re	Reasoning	assessment.	selection of	formative	Reasoning	formative
response as a	assessment. Allow	response as a	asoning	constructed	Allow students to	products for	assessment. Allow	constructed	assessment. Allow
formative	students to make	formative	constructed	response as a	make edits to	everyday use?	students to make	response as a	students to make
assessment.	edits to their	assessment.	response as a	formative	their constructed		edits to their	formative	edits to their
Allow students	constructed response		formative	assessment.	response	CER: Students	constructed	assessment.	constructed
to make edits to	_	make edits to	assessment. Allow	Allow students	throughout the	answer the	response	Allow students	response
their constructed				to make edits to	unit for a final	phenomenon in	throughout the	to make edits to	throughout the
response	submission.	response	edits to their	their	summative	a	unit for a final	their	unit for a final
throughout the		throughout the	constructed	constructed	submission.	Claim-Evidence-R	summative	constructed	summative
unit for a final		unit for a final	response	response		easoning	submission.	response	submission.
summative		summative	throughout the	throughout the		constructed		throughout the	
submission.		submission.	unit for a final	unit for a final		response as a		unit for a final	
			summative	summative		formative .		summative	
			submission.	submission.		assessment.		submission.	
						Allow students to			
						make edits to			
						their constructed			
						response			
						throughout the unit for a final			
						unit for a final			

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

Key Concepts	Systems and system models (MYP/CCC) Systems are sets of interacting or interdependen t components. Systems provide structure and order in human, natural and built environments. Systems can be static or dynamic, simple or complex.	Relationships (MYP) Relationships are the connections and associations between properties, objects, people and ideas - including the human community's connections with the world in which we live. Any change in a relationship brings consequences.	Relationships (MYP) Relationships are the connections and associations between properties, objects, people and ideas - including the human community's connections with the world in which we live. Any change in a relationship brings consequences.	Systems and system models (MYP/CCC) Systems are sets of interacting or interdependent components. Systems provide structure and order in human, natural and built environments. Systems can be static or dynamic, simple or complex.	Relationships (MYP) Relationships are the connections and associations between properties, objects, people and ideas - including the human community's connections with the world in which we live. Any change in a relationship brings consequences.	Change (MYP/CCC) Change is a conversion, transformation or movement from one form, state, or value to another. Inquiry into the concept of change involves understanding and evaluating causes, processes and consequences.	Systems and system models (MYP/CCC) Systems are sets of interacting or interdependent components. Systems provide structure and order in human, natural and built environments. Systems can be static or dynamic, simple or complex.	Relationships (MYP) Relationships are the connections and associations between properties, objects, people and ideas - including the human community's connections with the world in which we live. Any change in a relationship brings consequences.	Relationships (MYP) Relationships are the connections and associations between properties, objects, people and ideas - including the human community's connections with the world in which we live. Any change in a relationship brings consequences.	Systems and system models (MYP/CCC) Systems are sets of interacting or interdependent components. Systems provide structure and order in human, natural and built environments. Systems can be static or dynamic, simple or complex.
Related Concepts	Transformation (MYP)	Patterns (MYP/CCC) Structure & Function (MYP/CC)	Interactions (MYP)	Balance (MYP)	Interactions (MYP)	Energy (MYP/CC) Models (MYP/CC)	Energy (MYP/CC) Transformation (MYP/CC)	Movement (MYP)	Models (MYP/CC)	Movement (MYP/CC)

	Connecting Core Ideas Atomic and molecular motion Heating/co oling curves Gas Laws	Connecting Core Ideas Structure of atoms and elements Periodic Table trends	atoms and elements Periodic Table trends Compounds	Connecting Core Ideas Atomic and molecular motion Compounds: naming and writing formulas Conservation of matter	Connecting Core Ideas Solutions Acids and bases	Connecting Core Ideas Nuclear energy Fission and fusion Radioactive decay Energy transformat ions	Connecting Core Ideas Energy Thermal energy Heat Conductio n, Convection , Radiation Specific Heat Energy transforma tions	Connecting Core Ideas Forces and motion Newton's Laws Simple Machines Gravitational force Energy Energy transformatio ns	Connecting Core Ideas Electroma gnetic and mechanica I waves Reflection, refraction, interferenc e, and diffraction Doppler effect Energy Energy Transform ations	Connecting Core Ideas Electricity and magnetism Energy transformatio ns
MYP Assessments / Performance Tasks	Common Assessments Title and Criterion: Properties of Matter Unit Assessment Paper I and Paper II (Science: A,D) States of Matter Project (Science A,D) Gas Laws Lab (Science: B,C)	Common Assessments Title and Criterion: Atomic Structure and Periodic Table Unit Assessment Paper I and Paper II (Science: A,D) Analyzing PT Groups (Science: A,B,C) Investigating Mendeleev's Table (Science A,C,D)	Common Assessments Title and Criterion: Principles of Atomic Bonding Unit Assessment Paper I and Paper II (Science: A,D) Dissolving & Melting Mystery Substances Lab (Science: B,C)	Common Assessments Title and Criterion: Chemical Reactions Unit Assessment Paper I and Paper II (Science: A, D) Investigating & Identifying Chemical Reactions Lab (Science: C,D) Flameless Heating Unit Design Challenge (Science: A,D)	Common Assessments Title and Criterion: Solutions, Acids, and Bases Unit Assessment Paper I and Paper II (Science: A,D) Factors that Affect Solubility Lab (Science: B,C)	Common Assessments Title and Criterion: Nuclear Chemistry Unit Assessment Paper I and Paper II (Science: A,D) Modeling Half-Life (Science: B,C) Nuclear Energy Debate (Science A,D)	Common Assessments Title and Criterion: Energy Unit Assessment Paper I and Paper II (Science: A,D) Designing Systems of Energy (Design: B) Thermal Transfer Lab (Science B, C, D)	Common Assessments Title and Criterion: Forces & Motion Unit Assessment Paper I and Paper II (Science: A,D) Exploring Motion Using Ticker Tape Lab (Science: C,D) Stations: Calculating Mechanical Advantage Using Simple Machines	Common Assessments Title and Criterion: Waves Unit Assessment Paper I and Paper II (Science: A, D) Lab: Exploring Wave Behaviors	Common Assessments Title and Criterion: Electricity & Magnetism Unit Assessment Paper I and Paper II (Science: A,D) Electricity and Magnetism Lab (Motors, Generators, Electromagnets) (Science: B,C) (Design: B-D)

		Evolution of the Atom Comparison CER (A,D)	Compound Modeling Lab		Acids/Bases Labs (Science: B,C)					
Differentiation	Discovery	Discovery	Discovery	Discovery	Discovery	Discovery	Discovery	Discovery	Discovery	Discovery
For Tiered	Education	Education Science	Education	Education Science	Education	Education	Education	Education Science	Education	Education Science
Learners	Science	Techbook	Science	Techbook	Science	Science Techbook	Science	Techbook	Science	Techbook
	Techbook		Techbook		Techbook		Techbook		Techbook	
		NGSS Case Studies		NGSS Case		NGSS Case		NGSS Case		NGSS Case
	NGSS Case	for Differentiated	NGSS Case	Studies for	NGSS Case	Studies for	NGSS Case	Studies for	NGSS Case	Studies for
	Studies for	Learners	Studies for	Differentiated	Studies for	Differentiated	Studies for	Differentiated	Studies for	Differentiated
	Differentiated		Differentiated	Learners	Differentiated	Learners	Differentiated	Learners	Differentiated	Learners
	Learners	NGSS: All	Learners		Learners		Learners		Learners	
		Standards, All		NGSS: All		NGSS: All		NGSS: All		NGSS: All
	NGSS: All	Students	NGSS: All	Standards, All	NGSS: All	Standards, All	NGSS: All	Standards, All	NGSS: All	Standards, All
	Standards, All		Standards, All	Students	Standards, All	Students	Standards, All	Students	Standards, All	Students
	Students	Extensions -	Students		Students		Students		Students	
		Enrichment		Extensions -		Extensions -		Extensions -		Extensions -
	Extensions -	Tasks/Projects	Extensions -	Enrichment	Extensions -	Enrichment	Extensions -	Enrichment	Extensions -	Enrichment
	Enrichment		Enrichment	Tasks/Projects	Enrichment	Tasks/Projects	Enrichment	Tasks/Projects	Enrichment	Tasks/Projects
	Tasks/Projects		Tasks/Projects		Tasks/Projects		Tasks/Projects		Tasks/Projects	