Unit Na	me	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 Weeks	4 Weeks	3 Weeks	2 Weeks	3.5 Weeks	3 weeks	1.5 Weeks	4 Weeks	3.5 Weeks	2.5 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 &	Science &	Science &	Science &	Science &	Science &	Science &	Science &	Science &	Science &	Science &
	Engineering Practices	 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 investigatio ns to identify the relationship s between temperature , pressure, 	Engineering Practices Students will: • Develop and use models to compare and contrast the structure of atoms, ions, and isotopes.	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 compound s.	Engineering Practices Students will: 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	Engineering Practices 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	 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 l 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 experimenta I evidence to support the claims presented in Newton's three laws of motion.	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 contrast the characteristi	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
		volume, and density of gasses in closed systems.		 Develop and use models to predict formulas 	chemical reaction.	affect the rate solutes dissolve in a specific solvent.	process of half-life as it relates to radioactive decay.	 Analyze and interpret specific heat data to justify the 	 Analyze and interpret data to identify the relationship 	cs of electromag netic and mechanical waves.	the flow of electrons in simple series and parallel circuits.

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for stable, binary ionic	Analyze and interpret	• Construct arguments	selection of a material	between mass and	Develop models	• Plan and carry out
compound	data from a	based on	for a	gravitational	based on	investigations
s based on	solubility	evidence	practical	force for	experiment	to determine
balance of	curve to	about the	application	falling	al evidence	the
charges.	determine	applications,	(e.g.,	objects.	that	relationship
• Use the	the effect of	benefits, and	insulators	• Use	illustrates	between
Internation	temperature	problems of	and cooking	mathematic	the	magnetism
al Union of	on solubility.	nuclear	vessels).	s and	phenomena	and the
Pure and	 Obtain and 	energy as an	 Analyze and 	computatio	of	movement of
Applied	communicat	alternative	interpret	nal thinking	reflection,	electrical
Chemistry	е	energy	data to	to identify	refraction,	charge.
(IUPAC)	information	source.	explain the	the	interference	
nomenclat	to explain		flow of	relationship	, and	
ure for	the		energy	s between	diffraction.	
translating	relationship		during phase	work,	Analyze and	
between	between the		changes	mechanical	interpret	
chemical	structure		using	advantage,	data to	
names and	and		heating/cool	and simple	explain how	
chemical	properties		ing curves.	machines.	different	
formulas.	(e.g., pH,				media	
	and color				affect the	
	change in				speed and	
	the presence				sound of	
	of an				light waves.	
	indicator) of				Develop	
	acids and				and use	
	bases.				models to	
	 Plan and 				explain the	
	carry out				changes in	
	investigation				sound	
	s to detect				waves	
	patterns in				associated	
	order to				with the	
	classify				Doppler	
	common				effect.	
	household					
	substances					
	as acidic,					
	basic, or					
	neutral.					

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 for the creation of compounds.	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.
	Phenomena: How can we use our understanding of particle	<u>Phenomena</u> : How can we use our understanding of the organization of the periodic	Phenomena: How can we use our understanding of ionic and	Phenomenon: How can we use our understanding of chemical reactions and	Phenomenon: How can we use our understanding of solutions,	<u>Phenomena:</u> How can we use our understanding of fission and fusion	Phenomena: How can our understanding of energy transformations	<u>Phenomena</u> : How can we use our understanding of Newton's Laws,	Phenomena: How can we use our understanding of	Phenomena: How can we use our understanding of circuits, electrical current,

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	arrangement	table and atomic	covalent	LOCOM to	acids, bases,	to determine and	and specific	Work, and	electromagnetic	and magnetism to
	and Gas Laws	structure to	bonding to	develop a	and pH level to	justify if nuclear	heat data	Simple Machines	and mechanical	develop an
	to explain why	determine an	justify the use	flameless heating	help pH be	power is a viable	impact the	to evaluate the	waves to	appropriate
	certain objects	element's	of sport drinks	source for	used to	alternative	design and	mechanical	explain how	device for a given
	can explode	properties?	for athletes?	cooking?	determine	energy source?	selection of	advantage of	wave behaviors	function?
	due to			-	whether a		products for	common tools?	impact our	
	different				wound is	CER: Students	everyday use?		ability to	CER: Students
	temperatures	CER: Students	CER: Students	CER: Students	healing	answer the		CER: Students	observe matter	answer the
	or altitudes?	answer the	answer the	answer the	properly?	phenomenon in a	CER: Students	answer the	around us?	phenomenon in a
		phenomenon in a	phenomenon in	phenomenon in a		Claim-Evidence-Re	answer the	phenomenon in a		Claim-Evidence-Re
		Claim-Evidence-Rease	а	Claim-Evidence-Re	CER: Students	asoning	phenomenon in	Claim-Evidence-R	CER: Students	asoning
	CER: Students	ning constructed	Claim-Evidence-R	asoning	answer the	constructed	а	easoning	answer the	constructed
	answer the	response as a	easoning	constructed	phenomenon in	response as a	Claim-Evidence-R	constructed	phenomenon in	response as a
	phenomenon in	formative	constructed	response as a	а	formative	easoning	response as a	а	formative
	а	assessment. Allow	response as a	formative	Claim-Evidence-	assessment.	constructed	formative	Claim-Evidence-	assessment. Allow
	Claim-Evidence-F	students to make	formative	assessment. Allow	Reasoning	Allow students to	response as a	assessment.	Reasoning	students to make
	easoning	edits to their	assessment.	students to make	constructed	make edits to	formative	Allow students to	constructed	edits to their
	constructed	constructed response	Allow students to	edits to their	response as a	their constructed	assessment.	make edits to	response as a	constructed
	response as a	throughout the unit	make edits to	constructed	formative	response	Allow students to	their constructed	formative	response
	formative	for a final summative	their constructed	response	assessment.	throughout the	make edits to	response	assessment.	throughout the
	assessment.	submission.	response	throughout the	Allow students	unit for a final	their constructed	throughout the	Allow students	unit for a final
	Allow students		throughout the	unit for a final	to make edits to	summative	response	unit for a final	to make edits to	summative
	to make edits to		unit for a final	summative	their	submission.	throughout the	summative	their	submission.
	their constructed		summative	submission.	constructed		unit for a final	submission.	constructed	
	response		submission.		response		summative		response	
	throughout the				throughout the		submission.		throughout the	
	unit for a final				unit for a final				unit for a final	
	summative				summative				summative	
	submission.				submission.				submission.	

Global	Scientific and	Scientific and	Scientific and	Scientific and	Scientific and	Scientific and	Scientific and	Scientific and	Scientific and	Scientific and
Context	Technical	Technical	Technical	Technical	Technical	Technical	Technical	Technical	Technical	Technical
	Innovation	Innovation	Innovation	Innovation	Innovation	Innovation	Innovation	Innovation	Innovation	Innovation
	Students will	Students will	Students will	Students will	Students will	Students will	Students will	Students will	Students will	Students will
	explore the	explore the natural	explore the	explore the	explore the	explore the	explore the	explore the	explore the	explore the
	natural world	world and its laws;	natural world	natural world and	natural world	natural world and	natural world	natural world	natural world	natural world and
	and its laws;	the interaction	and its laws;	its laws; the	and its laws;	its laws; the	and its laws; the	and its laws; the	and its laws; the	its laws; the
	the interaction	between people	the interaction	interaction	the interaction	interaction	interaction	interaction	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 their
	use their	scientific principles;	use their	understanding of	use their	understanding of	their	understanding of	use their	understanding of
	understanding	the impact of	understanding	scientific	understanding	scientific	understanding	scientific	understanding	scientific
	of scientific	scientific and	of scientific	principles; the	of scientific	principles; the	of scientific	principles; the	of scientific	principles; the
	principles; the	technological	principles; the	impact of	principles; the	impact of	principles; the	impact of	principles; the	impact of
	impact of	advances on	impact of	scientific and	impact of	scientific and	impact of	scientific and	impact of	scientific and
	scientific and	communities and	scientific and	technological	scientific and	technological	scientific and	technological	scientific and	technological
	technological	environments; the	technological	advances on	technological	advances on	technological	advances on	technological	advances on
	advances on	impact of	advances on	communities and	advances on	communities and	advances on	communities and	advances on	communities and
	communities	environments on	communities	environments; the	communities	environments;	communities	environments;	communities	environments; the
	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 on
	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	environments	how humans	environments	how humans	environments	how humans
	on human		on human	adapt	on human	adapt	on human	adapt	on human	adapt
	activity; how		activity; how	environments to	activity; how	environments to	activity; how	environments to	activity; how	environments to
	humans adapt		humans adapt	their needs.	humans adapt	their needs.	humans adapt	their needs.	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.
Concepts	(МҮР)	Structure & Function (MYP/CC)	(MYP)		(MYP)	Models (MYP/CC)	(MYP/CC) Transformation (MYP/CC)	(MYP)	(MYP/CC)	(MYP/CC)

Disciplina ry Core Ideas	Connecting Core Ideas Atomic and molecular motion Heating/co oling curves Gas Laws	Connecting Core Ideas Structure of atoms and elements Periodic Table trends	 <u>Connecting</u> <u>Core Ideas</u> Structure of atoms and elements Periodic Table trends Compounds : properties, bonds, and naming 	 <u>Connecting Core</u> <u>Ideas</u> 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	Connecting Core Ideas Forces and motion Newton's Laws Simple Machines Gravitational force Energy Energy transformati ons	Connecting Core Ideas Electromag netic and mechanical waves Reflection, refraction, interferenc e, and diffraction Doppler effect Energy	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) Evolution of the Atom Comparison CER (A,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) Compound Modeling Lab	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) Acids/Bases Labs (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)	tions 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	 Energy Transforma tions 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)

Differentiation	Discovery	Discovery	Discovery	Discovery	Discovery	Discovery	Discovery	Discovery	Discovery	Discovery
For Tiered	Education	Education Science	Education	Education Science	Education	Education	Education	Education	Education	Education Science
Learners	Science	Techbook	Science	Techbook	Science	Science Techbook	Science	Science	Science	Techbook
	Techbook		Techbook		Techbook		Techbook	Techbook	Techbook	
		NGSS Case Studies		NGSS Case		NGSS Case				NGSS Case
	NGSS Case	for Differentiated	NGSS Case	Studies for	NGSS Case	Studies for	NGSS Case	NGSS Case	NGSS Case	Studies for
	Studies for	Learners	Studies for	Differentiated	Studies for	Differentiated	Studies for	Studies for	Studies for	Differentiated
	Differentiated		Differentiated	Learners	Differentiated	Learners	Differentiated	Differentiated	Differentiated	Learners
	Learners	NGSS: All	Learners		Learners		Learners	Learners	Learners	
		Standards, All		NGSS: All		NGSS: All				NGSS: All
	NGSS: All	Students	NGSS: All	Standards, All	NGSS: All	Standards, All	NGSS: All	NGSS: All	NGSS: All	Standards, All
	Standards, All		Standards, All	Students	Standards, All	Students	Standards, All	Standards, All	Standards, All	Students
	Students	Extensions -	Students		Students		Students	Students	Students	
		Enrichment		Extensions -		Extensions -				Extensions -
	Extensions -	Tasks/Projects	Extensions -	Enrichment	Extensions -	Enrichment	Extensions -	Extensions -	Extensions -	Enrichment
	Enrichment		Enrichment	Tasks/Projects	Enrichment	Tasks/Projects	Enrichment	Enrichment	Enrichment	Tasks/Projects
	Tasks/Projects		Tasks/Projects		Tasks/Projects		Tasks/Projects	Tasks/Projects	Tasks/Projects	