Chemistry Group Overview

Course Name: Chemistry	Unit Name	Atoms and Periodicity	Properties and Bonding	Reactions and Stoichiometry	Solutions and Acids/Bases	Gases	Thermochemistry	Kinetics and Equilibrium
	Time Frame	6 weeks	6 weeks	9 weeks (S1 - 6 weeks)(S2 - 3 weeks)	6 weeks	3 weeks	3 weeks	3 weeks
	Standards	SC1. a, b, c, d, e, f, g	SC2. a, b, c, d, e, f	SC3. a, b, c, d, e	SC6. a, b, c, d, e, f, g, h	SC5. c	SC2. g SC5. a, b	SC4. a, b, c, d
	Science and Engineering Practices	**SEPs** ● Obtain, evaluate, & communicate information ● Construct explanations and design solutions ● Engage in argument from evidence ● Develop and use models	**SEPs** ● Obtain, evaluate, & communicate information ● Ask questions and define problems ● Develop and use models ● Plan and carry out investigations ● Construct explanations and design solutions ● Engage in argument from evidence	**SEPs** ● Obtain, evaluate, & communicate information ● Plan and carry out investigations ● Use mathematics and computational thinking	**SEPs** ● Obtain, evaluate, & communicate information ● Ask questions and define problems ● Develop and use models ● Plan and carry out investigations ● Use mathematics and computational thinking	**SEPs** ● Obtain, evaluate, & communicate information ● Develop and use models ● Use mathematics and computational thinking	**SEPs** ● Obtain, evaluate, & communicate information ● Develop and use models ● Plan and carry out investigations ● Use mathematics and computational thinking ● Construct explanations and design solutions	**SEPs** ● Obtain, evaluate, & communicate information ● Plan and carry out investigations ● Construct explanations and design solutions ● Engage in argument from evidence ● Analyze and interpret data
	Approaches To Learning	**ATL** ● Communication skills: give and receive meaningful feedback ● Self Management skills: Develop new skills, techniques and strategies for effective learning	**ATL** ● Self Management skills: Identify strengths and weaknesses of personal learning strategies (self-assessment) ● Research skills: Process data and report results	**ATL** ● Self Management skills: Managing state of mind ● Thinking skills: Practise observing carefully in order to recognize problems	**ATL** ● Communication skills: take effective notes in class ● Critical Thinking Skills: interpret data ● Information Literacy Skills: collect, record and verify data	**ATL** ● Communication skills: read critically and for comprehension ● Collaboration Skills: delegate and share responsibility for decision making ● Information Literacy Skills: present information in a variety of formats and platforms	**ATL** ● Communication skills: Negotiate ideas and knowledge with peers and teachers ● Research skills: Collect, Record, & Verify data ● Thinking skills -Analyse complex concepts and projects into their constituent parts and synthesize them to create new understanding	**ATL** ● Communication skills: Collaborate with peers and experts using a variety of digital environments and media ● Self- Management skills: Set goals that are challenging and realistic ● Thinking skills: Use models and simulations to explore complex systems and issues

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Statement of Inquiry	**Statement of Inquiry** Interactions between particles influence the properties and behavior of systems.	**Statement of Inquiry** Forces between particles determine structure and behavior.	**Statement of Inquiry** Conservation principles help predict and explain change.	**Statement of Inquiry** The interaction of components within a system influence its properties and behavior.	**Statement of Inquiry** Models help us understand relationships between variables and their interactions..	**Statement of Inquiry** Energy transformations influence systems and can be measured and modeled.	**Statement of Inquiry** Forces and interactions influence the balance and motion of systems.
Pheno-menon	**Phenomenon** Fireworks light up the sky with incredible colors and patterns.	**Phenomenon** Hydrophobic coatings repel water while preserving the natural behavior of raindrops.	**Phenomenon** Airbags utilize the chemical decomposition of sodium azide (NaN_3) which breaks down into elemental sodium (Na) and nitrogen gas (N_2).	**Phenomenon** When engaging in vigorous physical activity the body produces lactic acid which is neutralized by the body through various chemical processes.	**Phenomenon** Car tires “deflate” in the winter.	**Phenomenon** Hot Hands use exothermic reactions to generate heat.	**Phenomenon** A glow stick glows due to a chemiluminescent chemical reaction.
Global Context	**Global Context** Identities and Relationships	**Global Context** Orientation in Space and Time	**Global Context** Personal and Cultural Expression	**Global Context** Fairness and Development	**Global Context** Scientific and Technical Innovation	**Global Context** Scientific and Technical Innovation	**Global Context** Globalization and Sustainability
Key Concepts	**Key Concept(s)** ● Systems ● Relationships **CCCs** ● Systems and System Models ● Structure and Function ● Patterns ● Energy and Matter	**Key Concept(s)** ● Systems **CCCs** ● Structure and Function ● Stability and Change ● Patterns ● Energy and Matter ● Systems and System Models	**Key Concept(s)** ● Systems ● Change **CCCs** ● Systems and System Models ● Stability and Change ● Scale, Proportion, and Quantity	**Key Concept(s)** ● Systems **CCCs** ● Systems and System Models ● Patterns ● Stability and Change ● Cause and Effect	**Key Concept(s)** ● Systems ● Change **CCCs** ● Systems and System Models ● Stability and Change ● Scale, Proportion, and Quantity ● Cause and Effect	**Key Concept(s)** ● Systems ● Change **CCCs** ● Systems and System Models ● Stability and Change ● Scale, Proportion, and Quantity ● Cause and Effect	**Key Concept(s)** ● Systems ● Change **CCCs** ● Systems and System Models ● Energy and Matter ● Stability and Change ● Cause and Effect
Related Concepts	**Related Concept(s)** ● Models ● Evidence ● Patterns	**Related Concept(s)** ● Patterns ● Form ● Consequences ● Interaction	**Related Concept(s)** ● Models ● Balance ● Interaction ● Transfer	**Related Concept(s)** ● Models ● Movement ● Interaction ● Conditions ● Function	**Related Concept(s)** ● Models ● Evidence ● Consequences	**Related Concept(s)** ● Models ● Balance ● Interaction ● Transfer	**Related Concept(s)** ● Models ● Energy ● Movement ● Function ● Conditions ● Evidence ● Consequences

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							● Transfer
	Design Cycle Trans-disciplinary	**CORE IDEAS** ● Element Formation ● Nuclear Fusion ● Models of the Atom ● Billiard Ball ● Plum Pudding ● Nuclear ● Bohr ● Quantum ● Element Identity ● Subatomic Particles ● Proton ● Neutron ● Electron ● Isotopes ● Isotopic Abundance ● Ions ● Electron Arrangement ● Orbital Notation ● Electron Configuration ● Full and Abbreviated ● Lewis Dot Diagram ● Light Emission ● Periodicity / Properties ● Atomic Mass ● Atomic Radii ● Ionization Energy ● Electronegativity ● Reactivity	**CORE IDEAS** ● Materials ● Intramolecular Forces ● Metallic Bonding ● Electron Sea Model ● Ionic Bonding ● Types of Ions ● Crystal Lattice ● Nomenclature ● Chemical Formulas ● Polyatomic Ions ● Intermolecular Forces ● Covalent Bonding ● Lewis Structure ● Nomenclature (including acids/bases) ● Chemical Formulas ● Polarity ● Physical and Chemical Properties ● Electrical Conductivity	**CORE IDEAS** ● Chemical Reactions ● Parts of a Chemical Reaction ● Indicators of a Reaction ● Types of Reactions ● Synthesis ● Decomposition ● Single Replacement ● Double Replacement ● Combustion ● Chemical Equations ● Law of Conservation ● Balancing Equations ● Reaction Stoichiometry ● Limiting Reactants ● Excess Reactant ● Mole Conversions ● Moles to Moles ● Mass to Moles ● Moles to Mass ● Mass to Mass ● Molar Volume ● Mole Ratio ● Percent Yield ● Percent Composition ● Empirical Formulas ● Molecular Formulas ● Significant Figures	**CORE IDEAS** ● Solutions ● Parts of a Solution ● Solvation ● Dissociation ● Rate of Dissolving ● Concentration / Saturation ● Molarity ● Percent by Mass ● Dilution ● Saturated, unsaturated, supersaturated solutions ● Solution Preparation and Proper Labeling ● Colligative Properties ● Boiling Point Elevation ● Freezing Point Depression ● Acids and Bases ● H_3O^+ Concentration ● pH ● Arrhenius Model ● Bronsted-Lowry Model ● Neutralization ● Equivalence Point ● Titration ● Indicator ● End point	**CORE IDEAS** ● Gas Laws ● Pressure ● Ideal Gas Law ● Combined Gas Law ● Boyle's Law ● Charles' Law	**CORE IDEAS** ● Enthalpy ● Heat (formation, vaporization, fusion) ● Specific Heat ● Enthalpy ● Heat Change ● Hess' Law ● Phase Changes ● Heating Curves ● Energy ● Calorie and Calorimetry ● Joule ● Endothermic ● Exothermic	**CORE IDEAS** ● Energy ● Collision Theory ● Transition State Theory ● Activation Energy ● Reaction coordinate diagram ● Reaction Rates ● Forward Reaction ● Reverse Reaction ● Changing Reaction Rates ● Catalysts ● Concentration ● Temperature ● Pressure ● Equilibrium ● LeChatelier's Principle
	MYP Assessments/ Performance Tasks	● MYP Criterion A (i): explain scientific knowledge	● MYP Criterion A (iii): analyse and evaluate information to make scientifically supported judgments	● MYP Criterion C (iv): evaluate the validity of the method	● MYP Criterion B (iv): design scientific investigations	● MYP Criterion D (iii): apply scientific language effectively	● MYP Criterion B (iii): explain how to manipulate the variables, and explain how data will be collected ● MYP Criterion C (i): present collected and transformed data	● MYP Criterion D (ii): discuss and evaluate the various implications of the use of science and its application in solving a specific problem or issue

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Differentiation For Tiered Learners	Marietta City Schools teachers provide specific differentiation of learning experiences for all students. Details for differentiation for learning experiences are included on the district unit planners.
Course Levels	**Marietta City Schools offers Honors, and IB classes to provide differentiated learning experiences for students.**