

**General Brown Central School District  
Curriculum Map**

Course Title: <b>Chemistry</b>	Prepared By: Melissa Ruscio
Time Frame: First two weeks of September	Unit/Theme Basics of Matter and Inquiry
Essential Questions: What is matter? How is matter characterized? What attributes can be used to separate the types of matter? How can matter be separated based on its characteristics? How can the characteristics of matter be measured and recorded? What are the units used for these characteristics of matter?	
NYS Standards: HS-PS1-3 PS1.A HS.PS3.C MS.PS1.A RST.9-10.7 WHST.9-12.2 WHST.9-12.7 WHST.9-12.9 MP.4 HSN-Q.A.1 HSN-Q.A.2 HSN-Q.A.3	Vocabulary: S.I. unit, Meter, Liter, Gram, Mass, Weight, Volume, Density, Intensive, Extensive, Significant Figures, Precision, Accuracy, Matter, Element, Compound, Mixture, Heterogeneous Mixture, Homogeneous Mixture, Pure Substance, Particle Diagram, Chromatography, Filtration, Distillation, Scientific Notation
Student Objectives (The student will...): <ul style="list-style-type: none"> <li>• Classify types of matter</li> <li>• Draw particle diagrams to represent different types of matter</li> <li>• Recognize various techniques that can be used to separate matter</li> <li>• Convert between units of measurements</li> <li>• Differentiate between accuracy and precision</li> <li>• Write numbers in scientific notation</li> <li>• State rules to determine significant figures</li> <li>• Count significant figures</li> <li>• Understand the importance of significant figures</li> <li>• Calculate the volume and density of an object</li> </ul>	
Assessments: Quiz Regents-based exam Labs: <ol style="list-style-type: none"> <li>1. Safety Contract</li> <li>2. Hot Sauce Penny Lab</li> <li>3. Penny Density Lab</li> <li>4. Percent Comp of Salt in Salt Water</li> </ol>	

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5. Distillation Lab 6. Gold Penny	
Recommended Texts: Assorted Science Literacy Articles	Resources: Teacher developed videos and notes TestWizard CastleLearning

Course Title: <b>Chemistry</b>	Prepared By: Melissa Ruscio
Time Frame: Last two weeks of September	Unit/Theme Atomic Theory

<p>Essential Questions:</p> <p>What is the composition of an atom, including its nucleus?</p> <p>How are the components of an atom determined?</p> <p>What are the physical characteristic of the three subatomic particles?</p> <p>What happens if we change the number of protons? Neutrons? Electrons?</p> <p>Which subatomic particle determines the chemical ability of an atom?</p>
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<p>NYS Standards:</p> <p>HS-PS1-8 PS1.A MS.PS2.B RST.9-10.7 WHST.9-12.2 WHST.9-12.7 WHST.9-12.9 MP.4 HSN-Q.A.1 HSN-Q.A.2 HSN-Q.A.3</p>	<p>Vocabulary:</p> <p>Allotrope, Isotope, Anion, Kernel electron(s), Atom, Lewis Dot Diagram, Atomic Mass, Mass number, Atomic Mass unit (a.m.u.), Neutron, Atomic number, Nuclear Charge, Bohr model, Nucleons, Cation, Nucleus Compound, Orbit, Electron, Orbital, Electron Configuration, Proton, Excited state, Ground state, Ion, Valence electron(s), Wave-mechanical model</p>
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<p>Student Objectives (The student will...):</p> <ul style="list-style-type: none"> <li>• Understand that the modern model of the atom has evolved over a long period of time through the work of many scientists</li> <li>• Discuss the evolution of the atomic model</li> <li>• Relate experimental evidence to models of the atom</li> <li>• Identify the subatomic particles of an atom (proton, neutron, and electron)</li> <li>• Know the properties (mass, location, and charge) of subatomic particles</li> <li>• Determine the number of protons, neutrons, and electrons in a neutral atom and an ion</li> <li>• Differentiate between atomic number, mass number, and (average) atomic mass</li> <li>• Differentiate between an anion and a cation</li> <li>• Understand the derivation/basis of the atomic mass unit (amu)</li> <li>• Distinguish between ground and excited state</li> </ul>
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<ul style="list-style-type: none"> <li>• Identify and define isotopes</li> <li>• Calculate the (average) atomic mass for all isotopes of an element</li> <li>• Write electron configurations</li> <li>• Generate Bohr diagrams</li> <li>• Differentiate between kernel and valence electrons • Draw Lewis Dot Diagrams for an element or an ion</li> </ul>	
Assessments: Quiz Regents-based exam Labs: 7. Gold Foil 8. Bermanium	
Recommended Texts: Assorted Science Literacy Articles	Resources: Teacher developed video and notes TestWizard CastleLearning

Course Title: <b>Chemistry</b>	Prepared By: Melissa Ruscio
Time Frame: First three weeks of October	Unit/Theme Periodic Table
Essential Questions: How are the elements arranged on the Periodic Table? What are the major periodic trends found on the Periodic Table? How can the chemical reactivity of an element be determined by using the Periodic Table? What are the major families and their characteristics on the Periodic Table?	
NYS Standards: HS-PS1-1. PS1.A PS1.B HS-PS2-6 PS2.B RST.9-10.7 WHST.9-12.2 WHST.9-12.7 WHST.9-12.9 MP.4 HSN-Q.A.1 HSN-Q.A.2 HSN-Q.A.3	Vocabulary: Ionization energy, Electronegativity, Atomic Radius, Ionic Radius, Chemical Reactivity, Metallic Character, Nonmetallic character, Metals, Metalloids, Alkali metals, Alkaline Earth metals, Halogens, Noble Gases, Transition metals, Periodic, Periodic Law, Periods, Groups, Phases of matter, Solids, Liquids, Gases, Diatomic elements, Allotrope, Isoelectronic, Families, Nonmetals, Octet

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<p>Student Objectives (The student will...):</p> <ul style="list-style-type: none"> <li>• Describe the origin of the periodic table</li> <li>• State the modern periodic law</li> <li>• “Key” the periodic table according to metals vs. nonmetals and all 3 phases</li> <li>• Explain how an element’s electron configuration is related to the element’s placement within a period and a group on the periodic table’</li> <li>• Identify and state the properties of the following groups in the periodic table:             <ul style="list-style-type: none"> <li>○ Alkali metals</li> <li>○ Alkaline earth metals</li> <li>○ Halogens</li> <li>○ Noble Gases</li> <li>○ Transition metals</li> </ul> </li> <li>• State the trends of the following properties within periods and groups of elements including:             <ul style="list-style-type: none"> <li>○ Ionization energy</li> <li>○ Electronegativity</li> <li>○ Atomic Radius</li> <li>○ Chemical Reactivity</li> <li>○ Metallic/Nonmetallic character</li> </ul> </li> </ul>	
<p>Assessments: Quiz Regents-based exam Labs: 9. Element Classification 10. Periodic Table</p>	
<p>Recommended Texts: Assorted Science Literacy Articles</p>	<p>Resources: Teacher developed video and notes TestWizard CastleLearning</p>

<p>Course Title: <b>Chemistry</b></p>	<p>Prepared By: Melissa Ruscio</p>
<p>Time Frame: Last week of October through first two weeks of November</p>	<p>Unit/Theme Bonding</p>
<p>Essential Questions: Why do atoms bond? What subatomic particle is used in bonding? What are the major types of bonds and their characteristics? How do atoms bond? What are the major types of substances formed during bonding and their characteristics?</p>	
<p>NYS Standards:</p>	<p>Vocabulary:</p>

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<p>HS-PS1-2 PS1.A PS1.B HS-PS1-3 HS-PS1-4 HS-PS2-6 RST.9-10.7 WHST.9-12.2 WHST.9-12.7 WHST.9-12.9 MP.4 HSN-Q.A.1 HSN-Q.A.2</p>	<p>Molecule, Compound, Bond, Octet Rule, Exothermic, Endothermic, Ionic Bond, Covalent Bond, Oxidation number, Polyatomic ions, Stock system, Binary compound, Ternary compound, Polar molecule, Nonpolar molecules, Intermolecular forces (IMF's)</p>
<p>Student Objectives (The student will...):</p> <ul style="list-style-type: none"> <li>• Compounds can be differentiated by their chemical and physical properties</li> <li>• Two major categories of compounds are ionic and molecular (covalent) compounds.</li> <li>• Chemical bonds are formed when valence electrons are: transferred from one atom to another (ionic); shared between atoms (covalent); mobile within a metal (metallic).</li> <li>• In a multiple covalent bond, more than one pair of electrons is shared between two atoms. Unsaturated organic compounds contain at least one double or triple bond.</li> <li>• Molecular polarity can be determined by the shape and distribution of that charge.             <ul style="list-style-type: none"> <li>○ Symmetrical (nonpolar) molecules include CO<sub>2</sub>, CH<sub>4</sub>, and diatomic elements.</li> <li>○ Asymmetrical (polar) molecules include HCl, NH<sub>3</sub>, and H<sub>2</sub>O.</li> </ul> </li> <li>• When an atom gains one or more electrons, it becomes a negative ion and its radius increases. When an atom loses one or more electrons, it becomes a positive ion and its radius decreases.</li> <li>• When a bond is broken, energy is absorbed. When a bond is formed, energy is released.</li> <li>• Atoms attain a stable valence electron configuration by bonding with other atoms.             <ul style="list-style-type: none"> <li>○ Noble gases have stable valence electron configurations and tend not to bond.</li> </ul> </li> <li>• Physical properties of substances can be explained in terms of chemical bonds and intermolecular forces. These properties include conductivity, malleability, solubility, hardness, melting point, and boiling point.</li> <li>• Electron-dot diagrams (Lewis structures) can represent the valence electron arrangement in elements, compounds, and ions.</li> <li>• Electronegativity indicates how strongly an atom of an element attracts electrons in a chemical bond. Electronegativity values are assigned according to an arbitrary scale.</li> <li>• The electronegativity difference between two bonded atoms is used to assess the degree of polarity in the bond.</li> <li>• Metals tend to react with nonmetals to form ionic compounds. Nonmetals tend to react with other nonmetals to form molecular (covalent) compounds. Ionic compounds containing polyatomic ions have both ionic and covalent bonding.</li> <li>• Determine the noble gas configuration an atom will achieve when bonding.</li> <li>• Demonstrate bonding concepts, using Lewis dot structures, representing valence electrons: transferred (ionic bonding); shared (covalent bonding); in a stable octet.</li> <li>• Distinguish between nonpolar and covalent bonds (two of the same nonmetals) and polar covalent bonds.</li> </ul>	

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Assessments: Quiz Regents-based exam Labs: 11. Bonding 12. Bonding MP and BP 13. It's In the Bag	
Recommended Texts: Assorted Science Literacy Articles	Resources: Teacher developed videos and notes TestWizard CastleLearning

Course Title: <b>Chemistry</b>	Prepared By: Melissa Ruscio
Time Frame: Last week in November and first two weeks in December	Unit/Theme Moles and Stoich
Essential Questions: What is a mole? What are the characteristics of a chemical reaction? What rules must be followed during a chemical reaction? How can the amounts of reactants or products be calculated?	
NYS Standards: HS-PS1-2 PS1.A PS1.B ETS1.C HS-PS1-7 RST.9-10.7 WHST.9-12.2 WHST.9-12.7 WHST.9-12.9 MP.4 HSN-Q.A.1 HSN-Q.A.2	Vocabulary: Mole, Formula mass (FM), Gram formula mass (GFM), Coefficient, Subscript, Species, Law of conservation of mass, Law of conservation of energy, Balanced equation, Synthesis reaction, Decomposition reaction, Single-replacement reaction, Double-replacement reaction, Molecular formula, Empirical formula, Percent mass
Student Objectives (The student will...): <ul style="list-style-type: none"> <li>• Calculate:             <ul style="list-style-type: none"> <li>○ Gram Formula mass</li> <li>○ Moles to grams</li> <li>○ Grams to moles</li> <li>○ Percent Composition</li> </ul> </li> </ul>	

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<ul style="list-style-type: none"> <li>○ Percent Composition with Crystal Hydrates</li> <li>● Balance Equations</li> <li>● Be able to identify which of the 4 basic types of reactions a specific reaction is</li> <li>● Use molar ratios to calculate mole to mole problems</li> <li>● Tell the difference between an empirical formula and a molecular formula</li> <li>● Determine empirical formulas</li> <li>● Determine molecular formulas</li> </ul>	
<p>Assessments:</p> <p>Quiz</p> <p>Regents-based exam</p> <p>Labs:</p> <p>14. Percent of Water in a Crystal Hydrate</p> <p>15. Reaction Types</p>	
<p>Recommended Texts:</p> <p>Various Science Literacy Articles</p>	<p>Resources:</p> <p>Teacher developed videos and notes</p> <p>TestWizard</p> <p>CastleLearning</p>

<p>Course Title:</p> <p><b>Chemistry</b></p>	<p>Prepared By:</p> <p>Melissa Ruscio</p>
<p>Time Frame:</p> <p>Third week in December/First two weeks in January</p>	<p>Unit/Theme</p> <p>Physical Behaviors of Matter</p>
<p>Essential Questions:</p> <p>How are the three phases of matter identified at both the macro- and micro- levels?</p> <p>How do substances change from one phase of matter to another?</p>	
<p>NYS Standards:</p> <p>HS-PS1-3</p> <p>PS1.A</p> <p>PS2.B</p> <p>HS-PS2-6.</p> <p>RST.9-10.7</p> <p>WHST.9-12.2</p> <p>WHST.9-12.7</p> <p>WHST.9-12.9</p> <p>MP.4</p> <p>HSN-Q.A.1</p> <p>HSN-Q.A.2</p>	<p>Vocabulary:</p> <p>Absolute Zero, Heating Curve, Avogadro's Law, Heat Transfer, Normal Boiling Point, Kinetic Energy, Compound, Kinetic Molecular Theory (KMT), Cooling Curve, Lattice, Deposition, Matter, Energy, Mixture, Element, Melting Point, Evaporation, Potential Energy, Heat, Sublimation, Heat of Fusion, Temperature, Heat of Vaporization, Vapor Pressure</p>
<p>Student Objectives (The student will...):</p>	

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<ul style="list-style-type: none"> <li>• Distinguish between the three phases of matter by identifying their different properties and representing them with particle diagrams</li> <li>• Perform simple conversions between Celsius and Kelvin temperature scales</li> <li>• Differentiate between exothermic and endothermic reactions/changes</li> <li>• Identify phase changes, and understand how to read a heating or cooling curve</li> <li>• Define heat, and understand how it varies from temperature</li> <li>• Solve heat equations</li> <li>• Solve gas law problems using the following laws: Avogadro’s Law, Combined Gas Law, Dalton’s Law of Partial Pressures</li> <li>• State and understand the Kinetic Molecular Theory (KMT)</li> <li>• Understand the relationship between temperature, volume, and pressure among gases using the following gas laws: Charles’ Law, Boyle’s Law, Gay Lussac’s Law</li> </ul>	
<p>Assessments: Quiz Regents-based Exam Labs:     16. Heat Curve of Water</p>	
<p>Recommended Texts: Various Science Literacy Articles</p>	<p>Resources: Teacher developed videos and notes TestWizard CastleLearning</p>

<p>Course Title: <b>Chemistry</b></p>	<p>Prepared By: Melissa Ruscio</p>
<p>Time Frame: Last two weeks in January</p>	<p>Unit/Theme Solutions</p>
<p>Essential Questions: How do the physical properties of a solution changed when it is made? How does the saturation of a solution effect its physical properties?</p>	
<p>NYS Standards: HS-PS1-3. PS2.B HS-PS2-6 RST.9-10.7 WHST.9-12.2 WHST.9-12.7 WHST.9-12.9 MP.4 HSN-Q.A.1 HSN-Q.A.2</p>	<p>Vocabulary: Alloy, Aqueous, boiling point, boiling point elevation, colligative properties, colloid, concentrated, concentration, dilute, heterogeneous, homogeneous, insoluble, miscible, mixture, molarity (M), parts per million (ppm), percent by mass percent by volume, freezing point depression, precipitate, saturated, solubility, soluble, solution, solute, solvent, supersaturated, suspension, Tyndall Effect, unsaturated</p>



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<p>Student Objectives (The student will...):</p> <ul style="list-style-type: none"> <li>• Differentiate between heterogeneous and homogeneous mixtures</li> <li>• Identify the various types of heterogeneous mixtures and their properties <ul style="list-style-type: none"> <li>○ colloid</li> <li>○ suspension</li> </ul> </li> <li>• Identify the various types of homogeneous mixtures and their properties <ul style="list-style-type: none"> <li>○ alloy</li> <li>○ solution</li> </ul> </li> <li>• Define solubility and understand the factors that contribute to solubility <ul style="list-style-type: none"> <li>○ nature of solute and solvent (like dissolves like)</li> <li>○ temperature</li> </ul> </li> <li>• Use Table F to determine if precipitate is formed in a chemical reaction</li> <li>• Distinguish between saturated, unsaturated, or supersaturated solutions</li> <li>• Read the solubility curve (Table G) to determine if a solution is (1) saturated, (2) unsaturated, or (3) supersaturated</li> <li>• Differentiate between dilute and concentrated solutions</li> <li>• Calculate various concentrations of a solution using the following: <ul style="list-style-type: none"> <li>○ Molarity (M)</li> <li>○ Percent by Mass</li> <li>○ Percent by Volume</li> <li>○ Parts per Million (ppm)</li> </ul> </li> <li>• Prepare a solution of known concentration</li> <li>• Explain a solute's effect on a solution (colligative properties) <ul style="list-style-type: none"> <li>○ Freezing Point Depression</li> <li>○ Boiling Point Elevation</li> </ul> </li> </ul>	
<p>Assessments: Quiz Regents Based Test Labs:     17. Solubility Curves</p>	
<p>Recommended Texts: Various Science Literacy Articles</p>	<p>Resources: Teacher developed videos and notes TestWizard CastleLearning</p>

<p>Course Title: <b>Chemistry</b></p>	<p>Prepared By: Melissa Ruscio</p>
<p>Time Frame: First two weeks in February</p>	<p>Unit/Theme Acids, Bases, and Electrolytes</p>
<p>Essential Questions:</p>	

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<p>What is the difference between an acid and a base?          What are the characteristics of an acid and a base?          What are the two major theories of acids and bases?</p>	
<p>NYS Standards:          HS-PS1-3.          PS2.B          HS-PS2-6          RST.9-10.7          WHST.9-12.2          WHST.9-12.7          WHST.9-12.9          MP.4          HSN-Q.A.1          HSN-Q.A.2</p>	<p>Vocabulary:          Amphoteric, Arrhenius acid, Arrhenius base,          Bronsted-Lowry acid, Bronsted-Lowry base,          Electrolyte, hydronium ion, hydroxide ion,          indicator (acid/base), neutralization, pH scale,          titration</p>
<p>Student Objectives (The student will...):</p> <ul style="list-style-type: none"> <li>• Compare and contrast properties of acids, bases, and salts</li> <li>• Compare the Arrhenius and Bronsted-Lowry theories of acids and bases</li> <li>• Explain and give examples of neutralization reactions</li> <li>• Using the titration equation, determine the molarity of an unknown solution</li> <li>• Understand how pH works</li> <li>• Using Table M, determine the pH of a given solution</li> </ul>	
<p>Assessments:          Quiz          Regents-based exam          Labs:              18. Titration              19. Vinegar Titration</p>	
<p>Recommended Texts:          Various Science Literacy Articles</p>	<p>Resources:          Teacher developed videos and notes          TestWizard          CastleLearning</p>

<p>Course Title:  <b>Chemistry</b></p>	<p>Prepared By:          Melissa Ruscio</p>
<p>Time Frame:          Last week of February and first two weeks of          March</p>	<p>Unit/Theme          Kinetics and Equilibrium</p>
<p>Essential Questions:          What makes a chemical reaction occur?          How does a chemical reaction change as the conditions of the environment change?</p>	

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<p>NYS Standards:          HS-PS1-4          HS-PS1-5          HS-PS1-6          PS1.A          PS1.B          RST.9-10.7          WHST.9-12.2          WHST.9-12.7          WHST.9-12.9          MP.4          HSN-Q.A.1          HSN-Q.A.2</p>	<p>Vocabulary:          Reaction Rate, Collision Theory, Reaction Mechanism, Factors Affecting Rate of Reaction: Nature of Reactants; Concentration; Surface Area; Pressure; Catalyst; Temperature, Physical Equilibrium, Phase Equilibrium, Solution Equilibrium, Chemical Equilibrium, Le Chatelier's Principle, Enthalpy, Entropy</p>
<p>Student Objectives (The student will...):</p> <ul style="list-style-type: none"> <li>• Explain collision theory</li> <li>• Use collision theory to explain rate of reactions based on:             <ul style="list-style-type: none"> <li>○ Phase of matter</li> <li>○ Concentration</li> <li>○ Pressure</li> <li>○ Temperature</li> <li>○ Surface area</li> <li>○ Catalyst</li> </ul> </li> <li>• Using Potential Energy graphs, be able to determine:             <ul style="list-style-type: none"> <li>○ Endothermic or exothermic</li> <li>○ PE of reactants/products</li> <li>○ Predict new line if catalyst used</li> <li>○ Activation Energy</li> <li>○ Activated complex</li> <li>○ Heat of reaction of products and reactants</li> </ul> </li> <li>• Determine heat of reaction using Table I</li> <li>• Use Table I to determine if reaction is endothermic or exothermic</li> <li>• Describe what equilibrium of a chemical reaction is</li> <li>• Use Le Chatelier's Principle to predict the shift/concentration of the reaction when the following is changed:             <ul style="list-style-type: none"> <li>○ Temperature</li> <li>○ Concentration</li> <li>○ Pressure</li> </ul> </li> <li>• Define entropy</li> <li>• Determine the entropy of a reaction based upon:             <ul style="list-style-type: none"> <li>○ Phases of matter</li> <li>○ Number of moles</li> </ul> </li> </ul>	
<p>Assessments:          Quiz          Regents-based exam          Labs:</p>	

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20. Factors Affecting Rate of Reaction	
Recommended Texts: Various Science Literacy Articles	Resources: Teacher developed videos and notes TestWizard CastleLearning

Course Title: <b>Chemistry</b>	Prepared By: Melissa Ruscio
Time Frame: Last two weeks of March and first week in April	Unit/Theme Redox
Essential Questions: What is a redox reaction? Why are redox reactions important?	
NYS Standards: HS-PS1-4 HS-PS1-5 HS-PS1-6 PS1.A PS1.B RST.9-10.7 WHST.9-12.2 WHST.9-12.7 WHST.9-12.9 MP.4 HSN-Q.A.1 HSN-Q.A.2	Vocabulary: Anode Oxidation, Half Reaction, Cathode, Reducing Agent, Electrochemical Cell, Oxidizing Agent, Electrode, Oxidation Number, Electrolytic Cell, Half reaction, Redox, Galvanic or Voltaic Cell, Reduction, Half Reaction, Salt bridge
Student Objectives (The student will...): <ul style="list-style-type: none"> <li>• Define and identify oxidation reactions</li> <li>• Define and identify reduction reactions</li> <li>• Assign oxidation numbers to elements in a compound</li> <li>• Write and balance half reactions</li> <li>• Identify oxidizing agents and reducing agents</li> <li>• Distinguish between voltaic and electrolytic cells</li> <li>• Identify the components of an electrochemical cell</li> <li>• Indicate the direction of electrons and ions through an electrochemical cell</li> <li>• Determine, using Table J, whether a reaction is spontaneous or not</li> </ul>	
Assessments: Quiz Regents-based exam	

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Labs: 21. Redox Introduction 22. Building a Galvanic Cell	
Recommended Texts: Various Science Literacy Articles	Resources: Teacher developed videos and notes TestWizard CastleLearning

Course Title: <b>Chemistry</b>	Prepared By: Melissa Ruscio
Time Frame: Two weeks in April and once week in May	Unit/Theme Organic Chemistry
Essential Questions: How is organic chemistry different from inorganic chemistry?	
NYS Standards: HS-PS1-4 HS-PS1-5 HS-PS1-6 PS1.A PS1.B RST.9-10.7 WHST.9-12.2 WHST.9-12.7 WHST.9-12.9 MP.4 HSN-Q.A.1 HSN-Q.A.2	Vocabulary: Addition rxn, Alcohol, Aldehyde, Aliphatic, Alkane, Alkene, Alkyne, Amide, Amine, Amino acid, Aromatic, Dehydration synthesis, Ester, Esterification, Ether, Fermentation, Functional group, Halide (halocarbon), Hydrocarbon, Isomer, Ketone, Monomer, Organic acid, Organic chemistry, Polymer, Polymerization, Primary, Saponification, Saturated hydrocarbon, Secondary, Substitution rxn, Tertiary, Unsaturated hydrocarbon
Student Objectives (The student will...): <ul style="list-style-type: none"> <li>• Identify organic compounds versus inorganic compounds based on structure, name, or characteristics of an unknown compound</li> <li>• Recognize the characteristics of organic compounds</li> <li>• Differentiate between aliphatic, aromatic, saturated, and unsaturated compounds</li> <li>• Name organic compounds based on IUPAC rules, with the help of table P and Q</li> <li>• Draw organic compounds from a IUPAC name</li> <li>• Distinguish between alkynes, alkenes, and alkanes</li> <li>• Name and identify isomers</li> <li>• Identify various functional groups of organic compounds using Table R:             <ul style="list-style-type: none"> <li>○ Halide (halocarbon)</li> <li>○ Organic Acid</li> <li>○ Alcohol</li> </ul> </li> </ul>	

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<ul style="list-style-type: none"> <li>○ Ester</li> <li>○ Ether</li> <li>○ Amine</li> <li>○ Aldehyde</li> <li>○ Amide o Ketone</li> </ul> <ul style="list-style-type: none"> <li>● Categorize various organic reactions properly including addition, substitution, polymerization, esterification, fermentation, saponification, and combustion.</li> </ul>	
Assessments: Quiz Regents-based exam Labs: 23. Table R lab 24. PVA Slime	
Recommended Texts: Various Science Literacy Articles	Resources: Teacher developed videos and notes TestWizard CastleLearning

Course Title: <b>Chemistry</b>	Prepared By: Melissa Ruscio
Time Frame: Three weeks in May	Unit/Theme Nuclear Chemistry
Essential Questions: How do atomic bombs and nuclear power plants work?	
NYS Standards: HS-PS1-8 PS1.C RST.9-10.7 WHST.9-12.2 WHST.9-12.7 WHST.9-12.9 MP.4 HSN-Q.A.1 HSN-Q.A.2	Vocabulary: Alpha particle, Artificial transmutation, Beta particle, Fission, Fusion, Gamma radiation, Half-life, Radioactive tracer, Radioisotope, Transmutation
Student Objectives (The student will...): <ul style="list-style-type: none"> <li>● Predict the stability of an isotope based on the ratio of neutrons and protons in its nucleus.</li> <li>● Understand that while most nuclei are stable some are unstable and spontaneously decay emitting radiation.</li> <li>● Calculate the initial amount of the fraction remaining, or the half life of a radioactive isotope, using the half life equation.</li> <li>● Understand the concept of half life.</li> </ul>	

**General Brown Central School District  
Curriculum Map**

<ul style="list-style-type: none"> <li>• Differentiate between the following emissions based on mass, charge, ionizing power, and penetrating power:             <ul style="list-style-type: none"> <li>○ Alpha</li> <li>○ Beta</li> <li>○ Positron</li> <li>○ Gamma</li> </ul> </li> <li>• Determine the type of decay (alpha, beta, positron, gamma) and write the nuclear equations.</li> <li>• Compare and contrast fission and fusion reactions</li> <li>• Distinguish between natural and artificial transformations.</li> <li>• Complete nuclear equations and predict missing particles from nuclear equations.</li> <li>• Understand the change in energy in a nuclear reaction.</li> <li>• Be aware of the risks associated with radioactivity.</li> <li>• Recognize the beneficial uses and real world application of radioactive isotopes.             <ul style="list-style-type: none"> <li>○ Radioactive dating</li> <li>○ Tracing chemical and biological processes</li> <li>○ Industrial measurement</li> <li>○ Nuclear power</li> <li>○ Detection and treatment of diseases</li> </ul> </li> </ul>	
<p>Assessments: Quiz Regents Based exam Labs: 25. M&amp;M lab</p>	
<p>Recommended Texts:</p>	<p>Resources: Teacher developed videos and notes TestWizard CastleLearning</p>

Built in time for midterm and snow days