**Chemistry Units Outline**

**2024-2025**

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| **Unit 8** | **Reaction Rates and Equilibrium** |
| **Learning Targets:** | LT8A – Develop and use models to describe solutions in terms of the number of solute particles, volume and Molarity of solutions.  LT8B – Develop and/or use a model to predict and explain how changing temperature and concentration affect the rate of a chemical reaction.  LT8C – Refine a chemical system by identifying changes in conditions that will increase the amount of paroducts at equilibrium. |
| **Assessment(s) for Evidence** | Test - (practice quizzes for review) |
| **Resources/Links** | Binder Materials |
| **Unit 7** | **Stoichiometry** |
| **Learning Targets:** | LT7A – Account for changes in mass in a chemical reaction using stoichiometric calculations and justify using the law of conservation of matter.  LT7B – Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy. |
| **Assessment(s) for Evidence** | Test - (practice quizzes for review) |
| **Resources/Links** | Binder Materials |
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| **Unit 6** | **Chemical Reactions** |
| **Learning Targets:** | LT6A – Justify the outcome of a complex chemical reaction using patterns of attraction, valence electrons, and/or electronegativity.  LT6B – Justify the claims that atoms and therefore mass are conserved in a chemical reaction.  LT6C – Develop and use a model to explain how energy changes can be accounted for as atoms are rearranged during chemical reactions. |
| **Assessment(s) for Evidence** | Test - (practice quizzes for review) |
| **Resources/Links** | Binder Materials |
| **Unit 5** | **Bonding** |
| **Learning Targets:** | LT5A – Predict the number and type of bonds formed (i.e. ionic, covalent, metallic) between elements and name the compound.  LT5B – Students conduct an investigation for the outcome of a given combination or decomposition reaction, based on outermost electrons, electronegativity and/or conservation of mass. |
| **Assessment(s) for Evidence** | Test - (practice quizzes for review) |
| **Resources/Links** | Binder Materials |

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| **Unit 4** | **Kinetic Molecular Theory** |
| **Learning Targets:** | LT4A – Plan and conduct an investigation to gather evidence to show how changes at the bulk scale (such as volume and temperature) can be explained by changes in particle motion and/or collisions.  LT4B – Apply scientific principles and evidence to provide an explanation about the effects of changing particle motion, particle spacing, and/or particle concentration on particle collisions.  LT4C – Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motion of particles (objects) and energy associated with the relative positions of particles. |
| **Assessment(s) for Evidence** | Test - (practice quizzes for review) |
| **Resources/Links** | Binder Materials |

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| **Unit 3** | **Energy Transfer** |
| **Learning Targets:** | LT3A – Plan and conduct an investigation to gather evidence about changes in energy that occur through a series of phase changes and how they relate to electrical forces between particles.  LT3B – Create a computational model to calculate the change in energy in a system when thermal energy changes to support a claim about the principle of conservation of energy.  LT3C – Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motion of particles (thermal energy), position of particles (phase energy) and bonds (chemical energy)  LT3D – Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperatures are combined within a closed system results in a more uniform energy distribution among the components in the system. |
| **Assessment(s) for Evidence** | Test - (practice quizzes for review) |
| **Resources/Links** | Binder Materials |

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| **Unit 2** | **Atomic Trends** |
| **Learning Targets:** | LT2A – Identify and describe elements and their arrangement in the periodic table, their atomic structure, valence electrons, and number of protons using the periodic table.  LT2B – Predict the number and charges in stable ions that form in atoms of a group of the periodic table as well as the number of bonds that are likely to form.  LT2C – Predict the trends in atomic size, reactivity, and electronegativity of atoms down a group and across a row in the periodic table, based on attractions and repulsion of electrically charged particles. |
| **Assessment(s) for Evidence** | Periodic Table Test (practice quizzes for review) |
| **Resources/Links** | Binder Materials |

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| **Unit 1** | **Properties of Matter** |
| **Learning Targets:** | LT1A – Describe the relationship between the measurable properties (ex: melting point, boiling point, vapor pressure, surface tension) of a substance and the strength of the electrical forces between the particles of the substance.  LT1B – Develop and implement an investigation plan that describes the data that will be collected and the evidence to be described from the data, including bulk properties of a substance (ex: melting point and boiling point, volatility, surface tension) that would allow inferences to be made about the strength of electrical forces between particles.  LT1C – Use at least two different formats (including oral, graphical, textual, and mathematical) to communicate scientific and technical information, including fully describing the structure, properties, and design of the chosen material(s) and the relationship between the material’s function and its macroscopic properties (ex: material strength, conductivity, reactivity, state of matter, durability) |
| **Assessment(s) for Evidence** | Test – (practice quizzes for review) |
| **Resources/Links** | Binder Materials |