

Chemistry

Unit 1: Matter & Change

5 – 7 days

2A.2.1	The student understands chemists use kinetic and potential energy to explain the physical and chemical properties of matter on earth. Matter may exist in any of these three states: solids, liquids, and gases.
1.1.5	The student communicates (reports) and defends the design, results, and conclusion of his/her investigation.
1.1.6	The student understands methods used to test hypotheses about the cause of a remote past event (historical hypothesis) that cannot be confirmed by experiment and/or direct observation by G50formulating competing hypotheses and then collecting the kinds of data (evidence) that would support one and refute the other.

Unit 2: Measurements and Calculations

10 – 12 days

1.1.3	The student correctly uses the appropriate technological tools and mathematics in their own scientific investigations.
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Unit 3: Atoms: The Building Blocks of Matter

7 – 10 days

2A.1.1	The student understands atoms, the fundamental organizational unit of matter, are composed of subatomic particles, organized in a small, dense, positively charged nucleus (containing protons and neutrons which determines the atomic mass) and surrounded by a negatively charged electron cloud (containing electrons, which determines the size of the atom).
2A.1.1	The student understands isotopes are atoms with the same atomic number (same number of protons) but different numbers of neutrons. The nuclei of some atoms are radioactive isotopes that spontaneously decay, releasing radioactive energy.
7.1.2	The student explains how science uses peer review, replication of methods, and norms of honesty.

Unit 4: Arrangement of Electrons in Atoms – Quantum Numbers 11 – 14 days

2A.1.1	The student understands atoms, the fundamental organizational unit of matter, are composed of subatomic particles, organized in a small, dense, positively charged nucleus (containing protons and neutrons which determines the atomic mass) and surrounded by a negatively charged electron cloud (containing electrons, which determines the size of the atom).
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Unit 5: The Periodic Table (Law)

8 – 10 days

2A.2.2	The student understands the periodic table lists elements according to increasing atomic number. This table organizes physical and chemical trends by groups, periods, and categories.
1.1.5	The student communicates (reports) and defends the design, results, and conclusion of his/her investigation.
1.1.6	The student understands methods used to test hypotheses about the cause of a remote

	past event (historical hypothesis) that cannot be confirmed by experiment and/or direct observation by G50formulating competing hypotheses and then collecting the kinds of data (evidence) that would support one and refute the other.
7.1.2	The student explains how science uses peer review, replication of methods, and norms of honesty.

Unit 6: Chemical Bonding

7 – 10 days

1.1.5	The student communicates (reports) and defends the design, results, and conclusion of his/her investigation.
1.1.6	The student understands methods used to test hypotheses about the cause of a remote past event (historical hypothesis) that cannot be confirmed by experiment and/or direct observation by G50formulating competing hypotheses and then collecting the kinds of data (evidence) that would support one and refute the other.
2A.2.3	The student understands chemical bonds result when valence electrons are transferred or shared between atoms. Ionic compounds result from atoms sharing electrons.

Unit 7: Chemical Formulas & Chemical Compounds

20 – 25 days

1.1.5	The student communicates (reports) and defends the design, results, and conclusion of his/her investigation.
1.1.6	The student understands methods used to test hypotheses about the cause of a remote past event (historical hypothesis) that cannot be confirmed by experiment and/or direct observation by G50formulating competing hypotheses and then collecting the kinds of data (evidence) that would support one and refute the other.
2A.2.2	The student understands the periodic table lists elements according to increasing atomic number. This table organizes physical and chemical trends by groups, periods, and categories.
2A.2.3	The student understands chemical bonds result when valence electrons are transferred or shared between atoms. Ionic compounds result from atoms sharing electrons.

Unit 8: Chemical Equations & Reactions

20 – 25 days

1.1.5	The student communicates (reports) and defends the design, results, and conclusion of his/her investigation.
1.1.6	The student understands methods used to test hypotheses about the cause of a remote past event (historical hypothesis) that cannot be confirmed by experiment and/or direct observation by G50formulating competing hypotheses and then collecting the kinds of data (evidence) that would support one and refute the other.
2A.3.1	The student understands a chemical reaction occurs when one or more substances (reactants) react to form a different chemical substance(s) (products).
2A.3.2	The student understands there are different types of chemical reactions all of which demonstrate the Law of Conservation of Mass (e.g., synthesis, decomposition, combustion, single and double replacement, acid/base, and oxidation/reduction).

Unit 9: Stoichiometry

18 – 20 days

1.1.5	The student communicates (reports) and defends the design, results, and conclusion of
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	his/her investigation.
1.1.6	The student understands methods used to test hypotheses about the cause of a remote past event (historical hypothesis) that cannot be confirmed by experiment and/or direct observation by G50formulating competing hypotheses and then collecting the kinds of data (evidence) that would support one and refute the other.

Unit 10: Physical Characteristics of Gases

10 – 12 days

1.1.5	The student communicates (reports) and defends the design, results, and conclusion of his/her investigation.
1.1.6	The student understands methods used to test hypotheses about the cause of a remote past event (historical hypothesis) that cannot be confirmed by experiment and/or direct observation by G50formulating competing hypotheses and then collecting the kinds of data (evidence) that would support one and refute the other.

Unit 11: Molecular Composition of Gases

6 – 8 days

1.1.5	The student communicates (reports) and defends the design, results, and conclusion of his/her investigation.
1.1.6	The student understands methods used to test hypotheses about the cause of a remote past event (historical hypothesis) that cannot be confirmed by experiment and/or direct observation by G50formulating competing hypotheses and then collecting the kinds of data (evidence) that would support one and refute the other.

Unit 13: Solutions

7 – 9 days

1.1.5	The student communicates (reports) and defends the design, results, and conclusion of his/her investigation.
1.1.6	The student understands methods used to test hypotheses about the cause of a remote past event (historical hypothesis) that cannot be confirmed by experiment and/or direct observation by G50formulating competing hypotheses and then collecting the kinds of data (evidence) that would support one and refute the other.

Unit 14: Ions in Aqueous Solutions & Colligative Properties

7 – 9 days

1.1.5	The student communicates (reports) and defends the design, results, and conclusion of his/her investigation.
1.1.6	The student understands methods used to test hypotheses about the cause of a remote past event (historical hypothesis) that cannot be confirmed by experiment and/or direct observation by G50formulating competing hypotheses and then collecting the kinds of data (evidence) that would support one and refute the other.

Unit 15: Acids & Bases

6 – 8 days

1.1.5	The student communicates (reports) and defends the design, results, and conclusion of
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	his/her investigation.
1.1.6	The student understands methods used to test hypotheses about the cause of a remote past event (historical hypothesis) that cannot be confirmed by experiment and/or direct observation by G50formulating competing hypotheses and then collecting the kinds of data (evidence) that would support one and refute the other.

Unit 16: Acid-Base Titration & pH

7 – 9 days

1.1.5	The student communicates (reports) and defends the design, results, and conclusion of his/her investigation.
1.1.6	The student understands methods used to test hypotheses about the cause of a remote past event (historical hypothesis) that cannot be confirmed by experiment and/or direct observation by G50formulating competing hypotheses and then collecting the kinds of data (evidence) that would support one and refute the other.
2A.3.2	The student understands there are different types of chemical reactions all of which demonstrate the Law of Conservation of Mass (e.g., synthesis, decomposition, combustion, single and double replacement, acid/base, and oxidation/reduction).

Unit 22: Nuclear Chemistry

5 – 7 days

1.1.5	The student communicates (reports) and defends the design, results, and conclusion of his/her investigation.
1.1.6	The student understands methods used to test hypotheses about the cause of a remote past event (historical hypothesis) that cannot be confirmed by experiment and/or direct observation by G50formulating competing hypotheses and then collecting the kinds of data (evidence) that would support one and refute the other.
2B.2.1	The student understands matter has energy. Mass and energy can be interchanged. The total energy in the universe is constant, but the type of energy may vary.