Key –

Big Ideas (BI)	
SPQ	Scale Proportion Quantity
TRA	Transformations
SAP	Structure and Properties
ENE	Energy

Science Practices (SP)	
1	Models and Representations
2	Question and Method
3	Representing Data and Phenomena
4	Model Analysis
5	Mathematical Routines
6	Argumentation

Unit 1 - Atomic Structure and Properties			
		BI	SP
1.1	Moles and Molar Mass	SPQ	5
1.2	Mass Spectroscopy of Elements	SPQ	5
1.3	Elemental Composition of Pure Substances	SPQ	2
1.4	Composition of Mixtures	SPQ	5
1.5	Atomic Structure and Electron Configuration	SAP	1
1.6	Photoelectron Spectroscopy	SAP	4
1.7	Periodic Trends	SAP	4
1.8	Valence Electrons and Ionic Compounds	SAP	4

Unit 2 - Molecular and Ionic Compound Structure and Properties			
2.1	Types of Chemical Bonds	SAP	6
2.2	Intramolecular Force and Potential Energy	SAP	3
2.3	Structure of Ionic Solids	SAP	4
2.4	Structure of Metals and Alloys	SAP	4
2.5	Lewis Diagrams	SAP	3
2.6	Resonance and Formal Charge	SAP	6
2.7	VSEPR and Bond Hybridization	SAP	6

Unit 3 - Intermolecular Forces and Properties			
3.1	Intermolecular Forces	SAP	4
3.2	Properties of Solids	SAP	4
3.3	Solids, Liquids, and Gases	SAP	3
3.4	Ideal Gas Law	SAP	5
3.5	Kinetic Molecular Theory	SAP	4
3.6	Deviation from Ideal Gas Law	SAP	6
3.7	Solutions and Mixtures	SPQ	5
3.8	Representations of Solutions	SPQ	3
3.9	Separation of Solutions and Mixtures Chromatography	SPQ	2
3.10	Solubility	SPQ	4
3.11	Spectroscopy and the Electromagnetic Spectrum	SAP	4
3.12	Photoelectric Effect	SAP	5
3.13	Beer-Lambert Law	SAP	2

Unit 4 - Chemical Reactions			
4.1	Introduction for Reactions	TRA	2
4.2	Net Ionic Equations	TRA	5
4.3	Representations of Reactions	TRA	3
4.4	Physical and Chemical Changes	TRA	6
4.5	Stoichiometry	SPQ	5
4.6	Introduction to Titration	SPQ	3
4.7	Types of Chemical Reactions	TRA	1
4.8	Introduction to Acid-Base Reactions	TRA	1
4.9	Oxidation-Reduction (redox) Reactions	TRA	5

Unit 5 – Kinetics			
5.1	Reaction Rates	TRA	6
5.2	Introduction to Rate Law	TRA	5
5.3	Concentration Changes Over Time	TRA	5
5.4	Elementary Reactions	TRA	5
5.5	Collision Model	TRA	6
5.6	Reaction Energy Profile	TRA	3
5.7	Introduction to Reaction Mechanisms	TRA	1
5.8	Reaction Mechanism and Rate Law	TRA	5
5.9	Steady-State Approximation	TRA	5
5.10	Multistep Reaction Energy Profile	TRA	3
5.11	Catalysis	ENE	6

Unit 6 – Thermodynamics			
6.1	Endothermic and Exothermic Processes	ENE	6
6.2	Energy Diagrams	ENE	3
6.3	Heat Transfer and Thermal Equilibrium	ENE	6
6.4	Heat Capacity and Calorimetry	ENE	2
6.5	Energy of Phase Changes	ENE	1
6.6	Introduction to Enthalpy of Reaction	ENE	4
6.7	Bond Enthalpies	ENE	5
6.8	Enthalpy of Formation	ENE	5
6.9	Hess's Law	ENE	5

Unit 7 – Equilibrium			
7.1	Introduction to Equilibrium	TRA	6
7.2	Direction of Reversible Reactions	TRA	4
7.3	Reaction Quotient and Equilibrium Constant	TRA	3
7.4	Calculating the Equilibrium Constant	TRA	5
7.5	Magnitude of the Equilibrium Constant	TRA	6
7.6	Properties of the Equilibrium Constant	TRA	6
7.7	Calculating Equilibrium Concentrations	TRA	5
7.8	Representations of Equilibrium	TRA	5
7.9	Introduction to Le Châtelier's Principle	TRA	7
7.10	Reaction Quotient and Le Châtelier's Principle	SPQ	6
7.11	Introduction to Solubility Equilibria	SPQ	6
7.12	Common-Ion Effect	SPQ	2
7.13	pH and Solubility	SPQ	2
7.14	Free Energy of Dissolution	SPQ	4

Unit 8 – Acids and Bases			
8.1	Introduction to Acids and Bases	SAP	5
8.2	pH and pOH of Strong Acids and Bases	SAP	5
8.3	Weak Acid and Base Equilibria	SAP	5
8.4	Acid-Base Reactions and Buffers	SAP	5
8.5	Acid-Base Titrations	SAP	5
8.6	Molecular Structure of Acids and Bases	SAP	6
8.7	pH and pKa	SAP	2
8.8	Properties of Buffers	SAP	6
8.9	Henderson-Hasselbalch Equation	SAP	5
8.10	Buffer Capacity	SAP	6

Unit 9 – Applications of Thermodynamics			
9.1	Introduction to Entropy	ENE	6
9.2	Absolute Entropy and Entropy Change	ENE	5
9.3	Favorability	ENE	6
9.4	Thermodynamic and Kinetic Control	ENE	6
9.5	Free Energy and Equilibrium	ENE	6
9.6	Coupled Reactions	ENE	4
9.7	Galvanic (Voltaic) and Electrolytic Cells	ENE	2
9.8	Cell Potential and Free Energy	ENE	5
9.9	Cell Potential Under Nonstandard Conditions	ENE	6
9.10	Electrolysis and Faraday's Law	ENE	5