

1. Core Chemical Foundations from Grades 9–10

- Particle model
- Atomic structure
- Periodic table structure
- Chemical symbols and formulae
- Basic reactions and equations
- Solutions and pH
- Metals, non-metals, and properties
- Scientific practices, safety, significant figures, uncertainty, and models in chemistry

2. Chemical Bonding and Structure

- Ionic bonding
- Covalent bonding
- Molecular structure
- Polarity at an introductory level where appropriate
- Bonding and physical properties
- Intermolecular ideas at an introductory level
- Structure-property relationships
- Material behaviour from bonding
- Conductivity, solubility, melting/boiling behaviour, and particle arrangement

3. Chemical Reactions and Quantitative Chemistry

- Formulae and balanced equations
- Mole concept
- Relative atomic and molecular mass
- Stoichiometry
- Limiting ideas at an introductory level
- Percentage yield at an introductory level
- Conservation in quantitative form
- Significant figures, uncertainty, and unit consistency in calculations where appropriate
- Interpreting quantitative reaction data

4. Solutions, Acids, Bases, and Solubility

- Concentration
- Dilution
- Solubility and saturated solutions
- Acids and bases
- Strong and weak behaviour at an introductory level
- pH and indicators
- Neutralisation and salts
- Laboratory and applied solution contexts

5. Rates, Energetics, and Equilibrium

- Reaction rate
- Factors affecting rate
- Collision reasoning
- Endothermic and exothermic change
- Energy profiles
- Reversible reactions
- Equilibrium at an introductory level
- Interpreting rate and energy data

6. Electrochemistry, Organic Chemistry, and Applications

- Redox
- Electrolysis
- Cells and batteries at an introductory level
- Hydrocarbons
- Combustion
- Polymers and materials
- Environmental and industrial chemistry
- Responsible use of chemistry
- Chemistry in energy, materials, and sustainability contexts

7. Shared Scientific Practices

- Investigable questions and hypotheses
- Variables, controls, assumptions, and limitations
- Measurement, units, significant figures, and unit consistency
- Uncertainty, error, reliability, and validity
- Data tables, graphs, diagrams, and model interpretation
- Claim-evidence-reasoning
- Method evaluation and improvement
- Safety, ethics, and responsible scientific practice