Chemistry Learning Journey

THE WINSFORD ACADEMY

Atomic Structure and Periodic Table

- Separating Mixtures: What separation techniques can be used to separate some simple mixtures.
- Electronic Structure: Patterns of the periodic table
- Periodic Table: What is it and what does it tell us about reactivity?
- Periodic Table: How was it discovered?
- Development of the atom: How it has developed over the years
- Elements: chemistry of elements and how they make compounds.

Bonding, structure and the properties of matter

- Ionic Bonding: Structure and properties
- Covalent Bonding: Structures and properties
- Metallic Bonding: Structures and properties
- Allotropes of carbon
- Nanoparticles: Uses and properties

Quantitative Chemistry

- Calculating concentration
- Calculating moles
- Relative formula mass and chemical measurements

Organic Chemistry

- Crude oil and hydrocarbons
- Fractional Distillation
- Organic Chemistry: What are hydrocarbons and why are they so important to us?
- Cracking: Catalytic and Thermal
- Reactions of alkenes and alcohols (T)
- Polymerisation: Addition and Condensation (T)
- Natural polymers (T)
- Carboxylic acids (T)

Chemical Changes

- Reactivity of metals
- Reactivity series
- Reactions of acids
- Neutralisation
- Electrolysis of molten compounds
- Electrolysis of aqueous solutions
- Atom economy and percentage yield

Energy Changes

- Exothermic vs endothermic
- Chemical Energy: simple reaction profiles.
- Factors affecting rate of reaction
- Rates of reaction and collision theory
- Reversible reactions
- Equilibrium
- Changing conditions

The rate and extent of change

- Chemical cells and batteries
- Fuel cells

Using Resources

- Potable water
- Sustainable development
- Waste water treatment
- Metal extraction: Phytomining and Bioleaching
- Life cycle assessments
- Alloys (T)
- Ceramics, polymers and composites (T)
- Corrosion: Causes and prevention (T)
- The Haber process and fertilisers (T)

Chemistry of the Atmosphere

- Greenhouse gases
- Atmospheric pollutants
- Earth's early atmosphere vs today's atmosphere
- Climate change and carbon footprint

Chemical Analysis

- Pure vs impure
- Chromatography
- Common gas tests
- Ion identification (T)

YEAR 11

YEAR 10