



The curriculum for this stage of students' education has been designed to ensure students understand that Chemistry is about everything. It is the central science that explains how the world around us works. It enables us to see patterns in the myriads of chemical reactions that occur in nature. The curriculum for this stage of students' education has been designed to inspire students, nurture their passion for the subject and lay the foundations for further study and the workplace. Building on work done in KS4, the course will bring to life the real-world contexts and applications of the modules being studied, with emphasis on the application of knowledge and the usefulness of laboratory research. Students will see how the laws of chemistry and the skills of today's chemists have been used to control chemical reactions and the importance of chemistry in manufacturing processes.

HALF TERM 1: AROMATIC CHEMISTRY

STUDENTS MUST KNOW:

Aromatic Chemistry

- Definitions of Aromatic Chemistry, Reactions of Benzene, Benzene Mechanisms, Amines, Reactivity of Amines, Naming Amines and Amides, Amino Acids and DNA, Formation of Polymers, Polyamides, Plastic Disposal, Organic Synthesis.

Spectroscopy

- Review of Infra-red Spectroscopy, NMR Spectroscopy, Introducing Proton NMR, Features of Proton NMR, Working out NMR, Splitting Patterns, High Resolution NMR, Carbon-13 NMR.

HOW THIS WILL BE ASSESSED:

Regular assessments will be done during the course of the topic using homework and independent study packs. Assessment will also entail end of unit tests for each topic.

HALF TERM 2: PHYSICAL CHEMISTRY

STUDENTS MUST KNOW:

Kinetics (Kc and Kp)

- Factors affecting Rates, Rate Equations, The Arrhenius Equation, Orders of Reaction, Equilibrium Constants (Kc), Equilibrium constants (Kp), Qualitative Equilibria.

Acids and Bases

- Bronsted-Lowry Acids and Bases, pH and the pH Scale, Calculating pH, Kw, Ka and pKa, Definitions –Acids and Bases, Reactions of Acids, Strong Bases, Weak Acids and Bases.

Titrations and Buffers

- pH Titration curves, Indicators, Buffers, Qualitative Buffers, Quantitative acidic buffers.

HOW THIS WILL BE ASSESSED:

Regular assessments will be done during the course of the topic using homework and independent study packs. Assessment will also entail end of unit tests for each topic.

HALF TERM 3: TRANSITION METALS

STUDENTS MUST KNOW:

- Transition Metals and Naming T. Metal Complexes, Formation of Coloured Ions, Colour and Colourimetry, Variable Oxidation States, Lewis Acids and Bases, Metal Aqua Ions, Acidity (Hydrolysis) Reactions, Reactions of Metal Aqua Ions, Substitution Reactions, Multidentate ligands and Chelation, *cis* Platin, Transition Metal Catalysts, Transition Metal Titrations, Oxidation in Alkaline Solution.

HOW THIS WILL BE ASSESSED:

Regular assessments will be done during the course of the topic using homework and independent study packs. Assessment will also entail end of unit tests for each topic.

HALF TERM 4: ELECTROCHEMISTRY

STUDENTS MUST KNOW:

Periodic Table Trends

- Periodicity, Group 2, The Alkali Earth Metals, The Halogens, Chemical trends of the Halogens, Testing Halide ions, Oxidation and Reduction, Redox reactions, Writing and balancing Redox equations, Naming Inorganic compounds.

HOW THIS WILL BE ASSESSED:

Regular assessments will be done during the course of the topic using homework and independent study packs. Assessment will also entail end of unit tests for each topic.

HALF TERM 5: ENERGETICS

STUDENTS MUST KNOW:

Organic Chemistry

- Organic Compounds, Isomerism, Optical isomerism, Aldehydes and Ketones, Carboxylic Acids, Esters, Hydrolysis of Esters, Biodiesel, Chromatography.

HOW THIS WILL BE ASSESSED:

Regular assessments will be done during the course of the topic using homework and independent study packs. Assessment will also entail end of unit tests for each topic.

HALF TERM 6: FINAL EXAMS

Embedding this knowledge can be supported at home by completion of homework, reviewing information and practicing past papers (www.chemguide.co.uk, www.physicsandmathstutor.com), watching videos placed on Sharepoint and reading scientific articles in newspapers, magazines, scientific journals and periodicals.