Bishop Milner CATHOLIC COLLEGE

Year 12 CURRICULUM PLAN for CHEMISTRY

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: AMOUNT OF SUBSTANCE/ATOMIC STRUCTURE

STUDENTS MUST KNOW:

Amount of substance

- Avogadro's number and Moles, Significant figures and Standard forms, RFM and Percentage Elements, Empirical Formula, Ideal Gas Equation, Standard Solutions and Molarity, Titration Calculations and errors, Predicting Masses, Atom Economy, Predicting and writing Ionic Formula.

Atomic structure

- Atomic Structure, The TOF Mass Spectrometer, Electron Configuration, Ionization Energies and Trends.

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: BONDING/ORGANIC CHEMISTRY

STUDENTS MUST KNOW:

Bonding

- Ionic bonding, Covalent bonding, Metallic bonding, Electronegativity and Bond polarization, Shapes of molecules Intermolecular forces, Periodicity.

Organic Chemistry

- Introduction to Organic Chemistry, Naming and drawing Organic Compounds, Isomers, Alkanes, Complete and incomplete Combustion, Cracking.

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: ORGANIC CHEMISTRY/ENERGETICS

STUDENTS MUST KNOW:

Organic Chemistry

- Haloalkanes, Alkenes, Alcohols, Organic analysis, Analytical Techniques.

Energetics

- Rate of reaction, Factors affecting rate, Kinetics, Hess's Law, Le Chatelier's principle, Chemical Equilibria, Equilibria in Industry.

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: PERIODICITY AND TRENDS

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: ORGANIC CHEMISTRY

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: STRUCTURAL DETERMINATION

STUDENTS MUST KNOW:

Structural Determination

- Mass Spectroscopy, IR Spectroscopy, NMR Spectroscopy.

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.

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.