Chemistry A Level

Course Description:

In Year 12 you are given a solid grounding in foundation Chemistry. The specification introduces the chemical reactivity of atoms and molecules and provides an understanding of their structures. The methods and techniques used in physical chemistry are introduced, and the mechanisms underpinning organic reactions are explored.

In Year 13 the specification develops the concepts of physical chemistry introduced in the first year. You will study kinetics, equilibria, thermodynamics and electrochemistry. You will further develop your descriptions and understanding in organic chemistry and spectroscopic techniques to determine the molecular formulae and structures of organic compounds.

Entry Requirements:

Minimum entry requirements apply. Grade 6 in Chemistry and at least a Grade 6 in Biology or Physics, **or,** two Grade 6s in Combined Science. A Grade 5 or above in English and a grade 6 or above in Maths is also required.

Course Aims:

- Develop an interest in, and enthusiasm for Chemistry, thereby fostering a desire for further study, leading to careers in Chemistry and related areas.
- Develop essential knowledge and understanding of different areas of Chemistry and how they relate to each other.
- Understand how society makes decisions about scientific issues, and how Chemistry influences our economy and society.

Future Prospects:

Chemistry is a great choice of subject for people who want a career in health and clinical professions, such as medicine, nursing, biochemistry, dentistry or forensic science. It will also equip you for a career in industry, for example in the petrochemical or pharmaceutical industries.

A qualification in the chemical sciences opens doors to a wide range of career opportunities. As well as practical knowledge of the subject, chemical science students develop many other useful skills, such as problem solving, numeracy, communication, creativity, team working, time management and data analysis. These skills are highly valued by employers and chemical science graduates successfully enter all sorts of career areas.

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Course Features:

- Use theories, models and ideas to develop and modify scientific explanations
- Use appropriate methodology, including ICT, to answer scientific questions and solve scientific problems
- Carry out experimental and investigative activities, including appropriate risk management, in a range of contexts

Year 12

Physical chemistry
Including atomic structure, amount of substance, bonding, energetics, kinetics, chemical equilibria and Le Chatelier's principle.

Inorganic chemistry
Including periodicity, Group 2 the Alkaline earth metals, Group 7(17) the halogens.

Organic chemistry
Including introduction to organic chemistry, alkanes, halogenoalkanes, alkenes, alcohols, organic analysis.

Year 13

Physical chemistry
Including thermodynamics, rate equations, equilibrium constant (Kc) for homogeneous systems, electrode potentials and electrochemical cells.

Inorganic chemistry
Including properties of Period 3 elements and their oxides, transition metal reactions of ions inaqueous solution.

Organic chemistry
Including optical isomerism, aldehydes and ketones, carboxylic acids and derivatives, aromatic chemistry, amines, polymers, amino acids, proteins and DNA, organic synthesis, NMR spectroscopy, chromatography.

Methods of Assessment:

Three 2 hour exams in the June of the second year of the course
Paper 1 – Physical and Inorganic Chemistry topics
Paper 2 – Physical and Organic Chemistry topics
Paper 3 – Synoptic paper of all content