**CHEMISTRY ADVANCED HIGHER**

The main aims of this Course are

* Extending and applying knowledge of chemistry to new situations, interpreting and analysing information to solve more complex problems
* Planning and designing chemical experiments/investigations, using reference material and including risk assessments, to test a hypothesis or to illustrate particular effects
* Carrying out complex experiments in chemistry, safely, recording systematic detailed observations and collecting data
* Selecting and presenting detailed information appropriately, in a variety of forms
* Processing and analysing chemical information (using calculations, significant figures and units, where appropriate)
* Making reasoned predictions and generalisations from a range of evidence/information
* Drawing valid conclusions and giving explanations supported by evidence/justification
* Critically evaluating experimental procedures by identifying sources of uncertainty, suggesting and implementing improvements
* Drawing on knowledge and understanding of chemistry to make accurate statements, describe complex information, provide detailed explanations and integrate knowledge
* Communicating chemical findings/information fully and effectively
* Analysing and evaluating scientific publications and media reports

**CONTENT**

**Inorganic and Physical Chemistry**

This Unit develops a knowledge and understanding of the principles and concepts of inorganic and physical chemistry. Learners will discover how electromagnetic radiation is used in atomic spectroscopy to identify elements. They will extend an understanding of the concept of atomic structure by considering atomic orbitals and electronic configuration related to the periodic table. Using electron pair theory, learners will predict the shape of molecules. Learners will gain an understanding of the physical and chemical properties of transition metals and their compounds. Learners will investigate the quantitative component of chemical equilibria. They will develop their understanding of the factors which influence the feasibility of chemical reactions. Learners will progress their understanding of reaction kinetics by exploring the order and mechanisms of chemical reaction.

**Organic Chemistry and Instrumental Analysis**

This Unit develops a knowledge and understanding of organic chemistry. Learners will research the structure of organic compounds, including aromatics and amines, and draw on this to explain the physical and chemical properties of the compounds. They will consider the key organic reaction types and mechanisms, and link these to the synthesis of organic chemicals. Learners will discover the origin of colour in organic compounds and how elemental analysis and spectroscopic techniques are used to verify chemical structure. They will study the use of medicines in conjunction with the interactions of the drugs.

**Researching Chemistry**

In this Unit, learners will be given the opportunity to gain an understanding of stoichiometric calculations, to develop practical skills and to carry out research in chemistry. Learners will develop the key skills associated with a variety of different practical techniques, including the related calculations.

**INTERNAL ASSESSMENT**

To pass the chemistry course, learners must pass all of the required Units. This includes a Unit Assessment, and a practical write up.

**EXTERNAL ASSESSMENT**

Learners must sit an external exam and complete a practical investigation. Both of these elements are externally marked.

**HOMEWORK**

About 2 hours per week to go over notes, answer questions and prepare for tests.

**ENTRY REQUIREMENTS**

Pupils should have a grade A-C pass at Higher level Chemistry, however, pupils with a C level pass may struggle with this course.