AS and A-Level Chemistry

Entry Requirements: Grades 6-6 in Combined Science or 6 in Chemistry and 6 in another science and 6 in Maths.

Exam Board: AQA

Subject Leader: Miss J Rigby jrigby@taptonschool.co.uk

Main Syllabus Area

AS and A-Level Chemistry will inspire students, nurture their passion for chemistry and lay the foundations for further study. It covers the three main areas of chemistry: physical, inorganic and organic. Subjects in **bold** are studied at A-Level.

Physical chemistry

- Atomic structure
- Amount of substance
- Bonding
- Energetics
- Kinetics
- Chemical equilibria and Le Chatelier's principle
- Oxidation, reduction and redox equations
- **Thermodynamics**
- **Rate Equations**
- **Equilibrium constant Kc for homogeneous systems**
- **Electrode potentials and electrochemical cells**
- **Acids and bases**

Inorganic chemistry

- Periodicity
- Group 2, the alkaline earth metals
- Group 7, the halogens
- **Properties of Period 3 elements and their oxides**
- **Transition metals**
- **Reactions of ions in aqueous solution**

Organic chemistry

- Introduction to organic chemistry
- Alkanes
- Halogenoalkanes
- Alkenes
- Alcohols
- Organic analysis
- **Optical isomerism**
- **Aldehydes and ketones**
- **Carboxylic acids and derivatives**
- **Aromatic chemistry**
- **Amines**
- **Polymers**
- **Amino acids, proteins and DNA**
- **Organic synthesis**
- **Nuclear magnetic resonance spectroscopy**
- **Chromatography**

Method of Assessment

AS Level:

Paper 1 – 1.5 hours - 50%

Paper 2 – 1.5 hours - 50%

A-Level:

Paper 1 - 2 hours – 35%

Paper 2 – 2 hours - 35%

Paper 3 – 2 hours – 30%

Qualities Required

High levels of interest, commitment and organisation; good mathematical skills; enthusiasm for practical's; enjoyment of science.

Links with other subjects

Chemistry links well with Physics and Biology, and also Mathematics and Geography to a lesser extent.

Career Prospects

Very good observation, logical analysis, numeracy and practical skills are developed with the ability to write clear reports, all of which are desirable to future employers and institutions. Possible careers include Chemical Research, Chemical Engineering, Medicine, Veterinary Science, Dentistry, Teaching, Physiotherapy, Pharmacology, Physiology, Forensics, Biochemistry, Biotechnology etc.

Extension and enrichment opportunities

Medical Society
Opportunity to take part in the University of Cambridge Chemistry Olympiad
Opportunity to attend national R.S.C. competitions.

Reading list

For Y11s looking to continue their studies at KS5

- The Disappearing Spoon by Sam Kean
- Periodic Tales: The Curious Lives of the Elements by Hugh Aldersey- Williams
- Stuff Matters by Mark Miodownik

For Y13s looking to continue their studies at degree level

- Marie Curie: The Life and Legacy of the Legendary Scientist Who Became the First Woman to Win a Noble Prize
- Molecules of Murder by John Emsley
- Oxygen: The Molecule that Made the World by Nick Lane
- Oxford Chemistry Primers (series of short books on a range of topics)

Independent study

- Consolidate class notes after every lesson using the Course Textbook provided.
- Complete and mark the topic summary questions in the course textbook provided.
- Complete and mark the chapter practice questions in the course textbook provided.
- Complete and mark past papers using resources from the learning platform and AQA website.