



Chemistry

Examination Board: AQA

Examination Code: 7405

Outline of the Course

Topics studied in Year 12 (in order)

1. Atomic structure and periodicity
2. Amount of substance
3. Bonding
4. Introduction to organic chemistry
5. Alkanes
6. Halogenoalkanes
7. Alkenes
8. Redox Reactions
9. Group II and Group VII
10. Energetics
11. Kinetics
12. Equilibria
13. Alcohols
14. Organic analysis

Topics studied in Year 13 (in order)

Teacher 1: Physical and Inorganic Chemistry

1. Thermodynamics
2. Acids and Bases
3. Electrode potentials and electrochemical cells
4. Period 3 elements and their oxides
5. Transition metals
6. Reactions of ions in aqueous solutions.

Teacher 2: Physical and Organic Chemistry

1. Optical isomerism
2. Aldehydes and ketones
3. Carboxylic acids and derivatives
4. Aromatic chemistry
5. Amines
6. Chromatography

7. Nuclear Magnetic Resonance Spectroscopy
8. The rate equation
9. Polymers
10. Amino acids, proteins and DNA
11. Organic Synthesis

What will you learn?

Chemistry can be divided into 3 main areas; Physical Chemistry, Inorganic Chemistry and Organic Chemistry.

Physical Chemistry

The year 12 units will further develop students understanding of structure and bonding and carrying out energy calculations. An understanding of energy calculations is important for chemical reactions that are used as a source of heat energy in applications such as domestic boilers and internal combustion engines. They will also consider the rate and extent of a chemical reaction calculating the equilibrium constant and applying Le Chatelier's principle to determine which reaction conditions will give the highest yield.

The year 13 units will use apply more sophisticated mathematical models to the study of kinetics and the equilibria reactions of acids and redox systems. An understanding of these models is key to developing new sources of energy that are sustainable.

Inorganic Chemistry

In year 12 students will study the trends in reactivity and applications of the alkaline metals and the halogens. They will apply a more sophisticated model of the atom to explain these trends. They will apply the concept of oxidation number, atomic radius and ionic radius to explain the trends in the ability of the halogens to behave as oxidising agents and the halide ions to behave as reducing agents.

In year 13 students will extend their knowledge of Period 3 to the properties of the Period 3 oxides and the transition metals. They will learn how transition metals form complex ions, coloured compounds and behave as catalysts in industrial applications.

Organic Chemistry

In year 12 students will be introduced to the IUPAC naming system for organic molecules and isomerism. They will learn to represent the mechanisms for the reactions of the alkanes, halogens and alkenes using curly arrows. They will also be introduced to infra-red spectroscopy; a valuable tool for identify different organic functional groups.

In Year 13 they will extend their study of mechanisms and functional groups to the carbonyls and their derivatives, aromatic molecules, and amines. They will also study synthetic and natural polymers looking at how condensation reactions are involved in the production of proteins

	<p>and DNA. They will also learn how to use NMR spectroscopy to determine molecular structures.</p> <p>Practical Skills Students will develop their practical skills in all 3 areas of chemistry and are assessed in 12 Required Practicals. Students will need to complete these successfully to pass the practical endorsement.</p>
<p>Mark Breakdown and Assessment</p>	<p>Students sit three 2 hour-long papers, each worth 105 marks. Paper 1 assesses Physical and Inorganic chemistry along with all relevant practical skills using a mixture of long and short answer questions Paper 2 assesses Physical and Organic chemistry along with all relevant practical skills using a mixture of long and short answer questions Paper 3 assesses all content using a mixture of long and short answer questions and multiple-choice questions. The Practical Endorsement is graded Pass or Fail</p>
<p>Website links</p>	<p>https://www.aqa.org.uk/subjects/chemistry/a-level/chemistry-7405/specification/specification-at-a-glance</p>
<p>Key Dates</p>	<p>Exam: May/June Year 13 CPAC submission May 15th</p>
<p>Further Information</p>	<p>Miss S.H Hayton-Curriculum Leader for Chemistry Mrs L. Wallace-Assistant Headteacher and Subject Teacher Mr S. Marshall- Head of sixth form and Subject Teacher Mrs L. Selby- Subject Teacher Mr Y Ahmed- Chemistry Technician</p> <p>s.hayton@stretfordgrammar.com</p>
<p>What can I do after I have completed the course?</p>	<p>A level Chemistry is essential for studying Medicine, Dentistry and Veterinary Science. The problem-solving skills developed are valued by many professions and students can go on to pursue careers in diverse</p>



areas such as finance, sustainability, developing fuels and energy sources, drug design.