

ADVANCED GCE CHEMISTRY

EXAMINING BOARD: AQA A Level Chemistry (7405)

Minimum Entry Requirements:
6 in GCSE Chemistry

KEY FEATURES OF THE COURSE:

Chemistry is the study of matter, its properties, how and why substances combine or separate to form other substances and how substances interact with energy. Many people think of Chemists as being white-coated scientists mixing strange liquids in a laboratory, but the truth is we are all Chemists. Doctors, nurses and veterinarians must study chemistry, but understanding basic chemistry concepts is important for almost every profession. Chemistry is part of everything in our lives. Every material in existence is made up of matter — even our own bodies. Chemistry is involved in everything we do, from growing and cooking food, to cleaning our homes and bodies, to launching a space shuttle. Chemistry is one of the physical sciences that help us to describe and explain our world.

Whilst studying A Level Chemistry, you'll demonstrate and apply your knowledge and understanding of scientific ideas to a range of theoretical and practical contexts and develop a wide range of practical skills, research and problem solving, organisation and analytical skills, setting you up well for post 16 study in a scientific course, or indeed any career requiring logical thinking.

At the end of Year 12, formal exams will be taken and an assessment of performance before progression.

MODULES/UNITS COVERED IN YEAR 12 (including a brief outline of their content)

1. **Physical Chemistry** - The chemical properties of elements depend on their atomic structure and in particular on the arrangement of electrons around the nucleus. This topic looks at atomic structure, amount of substance, bonding, energetics, kinetics, chemical equilibria, Le Chatelier's principle, equilibrium constants K_c and oxidation/reduction.
2. **Inorganic Chemistry** – The periodic table provides chemists with a structured organisation of the known chemical elements from which they can make sense of their physical and chemical properties. This topic looks at periodicity, Group 2 - alkaline earth metals and Group 7 - halogens.
3. **Organic Chemistry** – This is the study of the millions of covalent compounds of the element carbon. These structurally diverse compounds vary from naturally occurring petroleum fuels to DNA and the molecules in living systems. Organic compounds also demonstrate human integrity in the vast range of synthetic materials created by chemists. Many of these compounds are used as drugs, medicines and plastics. This topic looks at introduction to organic chemistry, alkanes, halogenoalkanes, alcohols and organic analysis.

MODULES/UNITS COVERED IN YEAR 13 (including a brief outline of their contents)

1. **Further Physical Chemistry** – this topic looks at thermodynamics, rate equations, equilibrium constants K_p for homogeneous systems, electrode potentials and electrochemical cells, acids and bases.
2. **Further Inorganic Chemistry** - this topic looks at the properties of period 3 elements and their oxides, transition metals, and the reaction of ions in aqueous solution.
3. **Further Organic Chemistry** – this topic looks at optical isomerism, aldehydes and ketones, carboxylic acids and derivatives, , aromatic chemistry, amines, polymers, amino acids, proteins and DNA, organic synthesis, nuclear magnetic resonance spectroscopy and chromatography.

TYPE OF ASSESSMENT IN YEAR 13

Three two hour written papers at the end of a two year period:

Paper 1

105 marks (35% of grade)

Covering content from physical and inorganic chemistry.

Includes short and longer answer questions. Time allowed: 2 hours.

Paper 2

105 marks (35% of grade)

Covering content from organic and physical chemistry.

Includes short and longer answer questions. Time allowed: 2 hours.

Paper 3

90 marks (30% of grade)

Includes 40 marks of questions on practical and data analysis, 20 marks of questions testing across the specification and 30 marks of multiple choice questions. Time allowed: 2 hours

PRACTICAL ENDORSEMENT

In addition to completing and passing the exams, students must complete a minimum of 12 practicals over the two year course to show competency at a range of practical skills, techniques and apparatus to pass the endorsement. All practicals link to the content covered in both years and include:

- Measurement of an enthalpy change
- Tests for alcohol, aldehyde, alkene and carboxylic acid.
- Measuring the rate of reaction.
- Carry out simple test-tube reactions to identify transition metal ions in aqueous solution.
- And many more...