

SCIENCE

'SOMEWHERE,
SOMETHING
INCREDIBLE IS
WAITING TO BE
KNOWN'

WHAT IS THE COURSE ABOUT?

The courses on offer aim to support the development of fundamental concepts and principles through the delivery of both theoretical and practical Biology, Chemistry and Physics. We teach biology, chemistry, and physics in ways that help our students to develop curiosity about the natural world, have an insight into how science works and an appreciation of its relevance to their everyday lives. Students will be able to demonstrate this through rigorous examination where scientific understanding is applied to a variety of contexts.

There are two different routes on offer:

1. Trilogy - Combined science (worth 2 GCSEs)
2. Separate sciences - biology, chemistry and physics (worth 3 GCSEs)

All students will complete the Trilogy course at GCSE level and will begin this content post-Christmas holiday in year 9. Those who choose separate sciences will begin the additional lessons in year 10 to cover the extra content over the remaining two years.



SUBJECT CONTENT

The course content below is what will be studied for the trilogy option with the separate sciences studying the same content but with extra detail in each unit plus space physics.

BIOLOGY

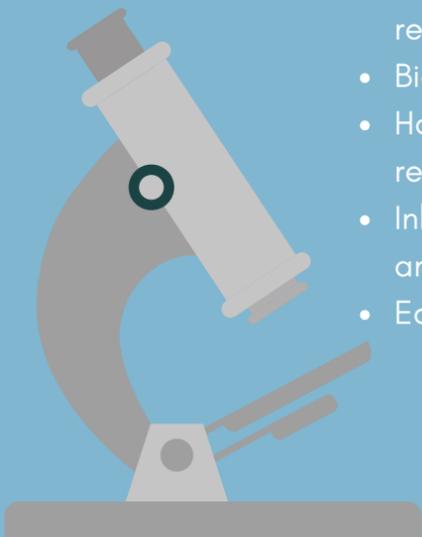
- Cell biology
- Organisation
- Infection and response
- Bioenergetics
- Homeostasis and response
- Inheritance, variation and evolution
- Ecology

CHEMISTRY

- Atomic structure and the periodic table
- Bonding, structure, and the properties of matter
- Quantitative chemistry
- Chemical changes
- Energy changes
- The rate and extent of chemical change
- Organic chemistry
- Chemical analysis
- Chemistry of the atmosphere
- Using resources

PHYSICS

- Energy
- Electricity
- Particle model of matter
- Atomic structure
- Forces
- Magnetism and Electromagnetism
- Waves



HOW WILL I BE ASSESSED?

Combined Science Trilogy

Six written exams, each 1hr and 15 minutes, they are each worth 70 marks and cover 16.7% of the GCSE. Either at Foundation (grades 1-5) and Higher Tier (grades 4-9)

- Paper 1 - Biology topics 1-4
- Paper 2 - Chemistry topics 8-12
- Paper 3 - Physics topics - 18-21
- Paper 4 - Biology topics 5-7 (including the fundamentals from topics 1-4)
- Paper 5 - Chemistry topics 13-17 (including the fundamentals from topics 8-12)
- Paper 6 - Physics topics - 22-24 (including the fundamentals from topics 18-21)

Separate Science

Six papers in total. Two written exams in each subject, each 1hr and 45 minutes, they are each worth 100 marks and cover 50% of the GCSE. Either at Foundation (grades 1-5) and Higher Tier (grades 4-9)

Biology

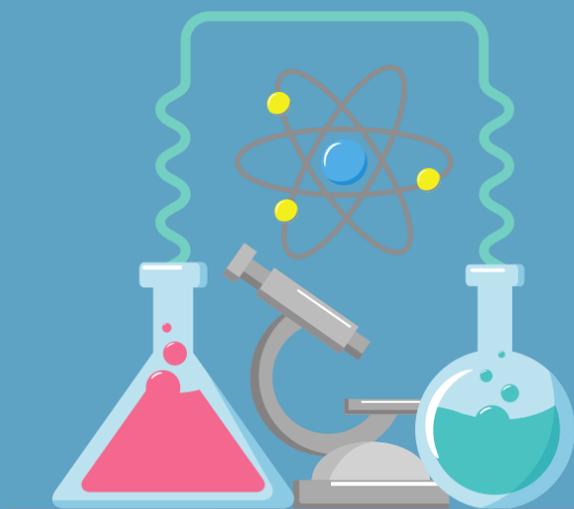
- Paper 1 - Biology topics 1-4
- Paper 2 - Biology topics 5-7

Chemistry

- Paper 1 - Chemistry topics 8-12
- Paper 2 - Chemistry topics 13-17

Physics

- Paper 1 - Physics topics - 18-21
- Paper 2 - Physics topics - 22-24 and Space Physics



WHAT SKILLS ARE REQUIRED?

Mathematical Skills

Biology - 10% maths content

Chemistry - 20% maths content

Physics - 30% maths content

- Arithmetic and numerical computation
- Handling Data
- Algebra
- Graphs
- Geometry and Trigonometry

Working Scientifically

Trilogy has 16 assessed practicals.

Biology, Chemistry and Physics have 8 assessed practicals each (24 in total).



To support and consolidate scientific concepts (knowledge and understanding)

- This is done by applying and developing what is known and understanding of abstract ideas and models.
- Through practical work, we are able to make sense of new information and observations, and provide insights into the development of scientific thinking.

To develop investigative skills. These transferable skills include:

- Devising and investigating testable questions.
- Identifying and controlling variables.
- Analysing, interpreting and evaluating data.

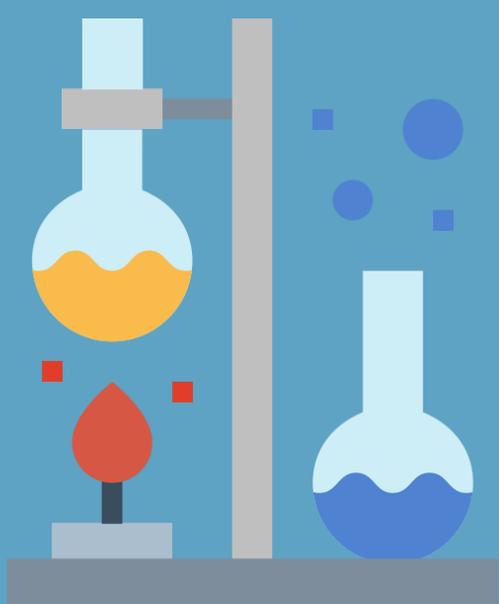
To build and master practical skills such as:

- Using specialist equipment to take measurements.
- Handling and manipulating equipment with confidence and fluency.
- Recognising hazards and planning how to minimise risk.

STUDYING SCIENCES MAY LEAD TO:

Successful completion of either of these courses enables a solid foundation for students to move onto college and study A-level Sciences, with the potential to move on to higher education at University. If University isn't for you, an understanding of the science around us is needed for many apprenticeships and careers that are out there.

Examples of careers linked to the sciences are below:



- Medicine - doctor, nurse, dentist, researcher, vet, paramedic
- Education - teacher, lecturer, professor
- Engineering - aerospace industry, energy industry, electrical engineering
- Computer Science - programming, data scientist
- Biochemistry - molecular biochemistry, stem cell research
- Biology - marine biologist, oceanographer, microbiologist
- Chemistry - forensics, pharmacist, minerals technology
- Physics - theoretical physicist, astronomer, medical physics

Please note, the list above is not exhaustive, as there are so many STEM careers that an understanding of science is required.