Science

Key Stage 3 (years 7-8)

Science is an amazing adventure for the young mind. We establish very early the five key ideas of secondary Science : Cells, Forces, Energy, Particles and Interactions between organisms. These for the backbone of lessons early in year 7 and throughout KS3.
In Year 7 Biology we teach about the human body, the systems that enable us to survive, genetics and adaptations and about food chains (supported by an educational trip to the zoo/wildspace). All of this knowledge and understanding is needed in year 8 where we teach Health in the context of specific body systems and how they interact.
In Year 7 Chemistry we teach about chemicals and how they can be differently structured and identified, and the basics of chemical reactions. All of this knowledge and understanding is needed in year 8 where we teach the details of key chemical reactions and apply them to the earth's systems and the environment.
In Year 7 Physics we teach about Energy, Forces, light and sound, electricity and magnetism, and link with chemistry in the states of matter. All of this knowledge and understanding is needed in year 8 where we teach conservation of energy, calculating forces, the solar system and about the wider Universe.
We finish KS3 by bringing many topics together with a cross science topic on Climate change, its causes impact and possible solutions.

Assessments also become more challenging as students move from year 7 to year 8 (for instance by assuming knowledge of key words or basic skills in calculation) and the practical skills used are developed from the basic set from year 7.
For more details about *when* each part of science is taught, please see the curriculum map.

Key Stage 4 (years 9-11)

OCR Gateway Science Suite (OCR A)
The Universe is a wondrous thing. Science seeks to utilise **humans**' natural curiosity to generate and develop a **life** long interest and concern for this Universe. Scientific ideas are rarely facts and the effect of Science on society is often **controversial**. We live in an increasingly technological world where scientific ideas affect many aspects of life. Because Science links direct **practical** experience with **ideas**, the more Science you know the more of the World you can **understand.** Everyone in England studies all **three Science** subjects (Biology, Chemistry and Physics) up to GCSE. What alters is how many GCSE's they achieve.

Science is **not** a part of the main Options process.
In year 9, everyone studies Combined Science.

GCSE Combined Science is the content studied by all students throughout England. It contains ideas about **Biology, Chemistry and Physics** and is worth two GCSE grades. All combined Science classes will have three teachers, specialists in either Biology, Chemistry or Physics. They will do assessments as the year progresses at either Higher or Foundation tier, that are just like the final exams in year 11 only shorter.

GCSE Biology, Chemistry, Physics
These are three separate GCSE qualifications studied by a minority of students in the UK. Towards the end of Year 9, Science will be looking at students record of performance in all of our assessments, completion of homework and ability to work quickly without interrupting others. As we need to cover three GCSE's worth of content in the same time that is given for two, the demands of Triple science courses are fairly high and only those who do extremely well in Year 9 will be considered for Triple Science. For example achieving grade 6 in our assessments will indicate you may be invited.

Both Combined and Triple Science lead to A levels in Science subjects if the final grades are likely to be strong (grade 6-6 or better).
For more details about *when* each part of science is taught, please see the curriculum map.

Key Stage 5 (Years 12-13)

Biology

Biology is the study of life and living things and is an enormous rapidly developing subject involving many allied disciplines such as Chemistry, Geology and Psychology.

THE COURSE AT A LEVEL:

- The course is entirely examined, with 3 papers completed.
- As the course develops and builds upon itself, all 3 examinations expect students to be able to see links between topics covered across the 2 years.
- You will also complete practical activities across the 2 years, which cover 12 key areas of Biological practical skill. Competent completion of these will result in a PASS in practical skills.

Year 12

- Module 1 – Development of practical skills in Biology
- Module 2 – Foundations in Biology
- Module 3 – Exchange and transport

Year 13

- Module 4 – Biodiversity, evolution and disease
- Module 5 – Communication, homeostasis and energy
- Module 6 – Genetics, evolution and ecosystems

For more details about *when* each part of science is taught, please see the curriculum map.

Key Stage 5 (Years 12-13)

Chemistry

The OCR A Level Chemistry course investigates a large variety of chemical principles through the study of their applications. Fuels, drugs and dyes are all used to show how theory is put into practice within the chemical world. Chemistry is a practical subject and you should expect to be actively involved in practical work in many lessons. The new practical component for the A Level makes attendance paramount and students have to demonstrate progression in their experimental competence throughout their studies. Chemistry involves a lot of calculation work, so you will need to be comfortable at using mathematical equations and have a good scientific calculator with you in lessons.

Entirely examined through 3 papers. The table below provides more detail on each. Practical work completed throughout Year 12 and 13 fulfils the practical component of the course which is endorsed separately

Year 12

Course Breakdown:

Module 1: Development of practical skills in chemistry

Module 2: Foundations in chemistry

Module 3: Periodic table and energy

Year 13

Module 4: Core organic chemistry

Module 5: Physical chemistry and transition elements

Module 6: Organic chemistry and analysis

For more details about *when* each part of science is taught, please see the curriculum map.

Key Stage 5 (Years 12-13)

Physics

Physics offers students the opportunity to understand all that is around them, from sub-atomic particles to the entire Universe. As physicists they will develop new ways to observe and understand the way the Universe works. The course is built around 6 modules that help develop students' knowledge, understanding and skills in Physics. As in other sciences, the Physics A Level contains a significant practical element, which is designed to enhance students' experimental skills. This approach also allows students to explore the world around them in an exciting, hands-on way that supports their theoretical understanding. Assessments completed throughout the year give students plenty of opportunity to reflect on their progress and address areas of development, with the support and guidance of their teachers.

THE COURSE AT A LEVEL:
Entirely examined through 3 papers.
The 3rd paper is of a synoptic nature.
You will also complete practical activities across the 2 years, which cover 12 key areas of practical skill. Competent completion of these will result in a PASS in practical skills.

Year 12
Module 1 - Development of practical skills
Module 2 - Foundations of physics
Module 3 - Forces and motion

Year 13
Module 4 - Electrons, waves and photons
Module 5 - Newtonian world and astrophysics
Module 6 - Particles and medical physics