

# SCIENCE

## CURRICULUM 2018-19

### KEY STAGE 3

During Key Stage 3, students will develop their scientific knowledge of biology, chemistry, and physics. They will develop an understanding of nature, processes, and methods of science through different types of scientific enquiries that will help them to answer questions about the world around them. This will equip our students with the scientific knowledge required to understand the uses and implications of science today and for the future. They will also be encouraged to relate scientific explanations to phenomena in everyday life, using models and abstract ideas to develop and evaluate explanations.

There are ten assessments in Year 7 and Year 8 that are approximately every three weeks. These assessments will test the students on what they have been learning in class and will help them understand what they need to do to improve. Alongside these assessments our students will also have a formal assessment at the end of each year. Our students' ability to work scientifically will be included in these assessments.

It is important to have an inquisitive outlook to be successful in science – questioning why and how things work and developing the answers to these questions through research. This can be supported by independent learning at home, taking a keen interest in new technologies and developments, attending science clubs and engaging with STEM activities. Students should regularly challenge themselves and reflect upon their own learning. Remember: science is everywhere, not just in the science classroom!

### KEY STAGE 4

Scientific understanding is changing our lives and is vital to the world's future prosperity. While studying Science our students will be taught essential aspects of the knowledge, methods, processes and uses of the subject. They will be helped to appreciate the achievements of science in showing how the complex and diverse phenomena of the natural world can be described in terms of a small number of key ideas relating to the sciences which are inter-linked, and which are of universal application. In Science at Year 10 and 11, each of the three sciences is taught by a specialist teacher.

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At Key Stage 4, students will choose between two qualifications. They may either study GCSE AQA Combined Science (Trilogy) OR GCSE AQA Separate Science.

In GCSE AQA Combined Science - Trilogy, students will study all three areas; biology, chemistry, & physics; and achieve a qualification worth 2 GCSEs. This is assessed using 100% terminal examination. There will be six examinations, each lasting 1 hour and 15 minutes. Each exam will assess a different aspect of the course. The units & examinations are arranged as follows:

### Biology:

Unit 1: *Cell Biology*

Unit 2: *Organisation*

Unit 3: *Infection & Response*

Unit 4: *Bioenergetics*

Unit 5: *Homeostasis and Response*

Unit 6: *Inheritance, Variation, and Evolution*

Unit 7: *Ecology*

Paper 1

Paper 2

### Chemistry:

Unit 1: *Atomic Structure & the Periodic Table*

Unit 2: *Bonding, Structure, & the Properties of Matter*

Unit 3: *Quantitative Chemistry*

Unit 4: *Chemical Changes*

Unit 5: *Energy Changes*

Unit 6: *The Rate & Extent of Chemical Change*

Unit 7: *Organic Chemistry*

Unit 8: *Chemical Analysis*

Unit 9: *Chemistry of the Atmosphere*

Unit 10: *Using Resources*

Paper 1

Paper 2

### Physics:

Unit 1: *Energy*

Unit 2: *Electricity*

Unit 3: *Particle Model of Matter*

Unit 4: *Atomic Structure*

Unit 5: *Forces*

Unit 6: *Waves*

Unit 7: *Magnetism & Electromagnetism*

Paper 1

Paper 2

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There are also twenty-one required practicals that will be completed during lessons. The skills obtained and developed while completing these practicals will be examined in the terminal assessment. Throughout the Combined Science – Trilogy course, there will be regular end of unit assessments and mock examinations designed to develop exam technique and test subject knowledge. Guidance will be offered following these assessments to support the progression of our students.

In GCSE AQA Separate Science, students will achieve three individual GCSEs in biology, chemistry and physics. This is assessed using 100% terminal examination. Each subject will have two examinations each lasting 1 hour and 45 minutes, which will assess students' understanding of specific aspects of biology, chemistry, and physics. Pupils studying for separate science will cover all of the units in combined science, as well as an extra unit on '*Space Physics*' which will be examined in second physics paper. There are twenty-eight required practicals that will be completed during lessons. The skills obtained and developed while completing these practicals will be examined in the terminal assessment. Throughout the separate science GCSE course there will be regular end of unit assessments and mock examinations designed to develop exam technique and test subject knowledge. Guidance will be offered following these assessments to support the progression of our students.

Independent learning is a fundamental aspect of GCSE Science. It is important that our students support their learning in class with activities and research outside of school. Students will be given regular opportunities to attend intervention and enrichment sessions offered by the science department. Away from the classroom they could access scientific websites, read scientific journals and watch documentaries about the latest developments in science.