

Key Stage 4 Curriculum

At Key Stage 3, we offer a broad and balanced curriculum that supports, challenges and excites our students. Subjects are taught discretely according to schemes of work that set out what knowledge we expect our students to acquire. This rigour not only gives our students the fulfilment and joy of mastering particular subject areas in depth but also allows them to analyse and to discuss their subjects with greater sophistication.

We work hard to ensure that students are supported to express themselves accurately, fluently and confidently, both orally and in writing, in all subjects.

Subject: Science

Head of Department:

In Key stage 4, all students are required to study Science for GCSE. They can either Double or Triple Science. In both cases, they study all three Sciences (Biology, Chemistry and Physics), but Double Science counts as two GCSEs, while Triple Science counts as three GCSEs.

They follow the AQA exam specification.

Click here to view the full specification for Combined Science (trilogy):

<https://filestore.aqa.org.uk/resources/science/specifications/AQA-8464-SP-2016.PDF>

Click here to view the full specification for GCSE Biology:

<https://filestore.aqa.org.uk/resources/biology/specifications/AQA-8461-SP-2016.PDF>

Click here to view the full specification for GCSE Chemistry:

<https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-8462-SP-2016.PDF>

Click here to view the full specification for GCSE Physics:

<https://filestore.aqa.org.uk/resources/physics/specifications/AQA-8463-SP-2016.PDF>

Below is an overview of what is taught.

Topic	Biology	Chemistry	Physics
1	Biotechnology Fertile Q: Is biotechnology a good thing for our planet?	Industrial Chemistry Fertile Q: How do chemical engineers design molecules?	Topic: Radiation Fertile Q: Why are some atoms radioactive?

	<p>Content:</p> <ul style="list-style-type: none"> • Stem cells • Discovery & development of drugs • Monoclonal antibodies • Selective breeding • Genetic Engineering • Cloning (Biology only) • Theory of evolution • Speciation (Biology only) • Food production (Biology only) 	<p>Content:</p> <ul style="list-style-type: none"> • Polymers • Bulk and surface properties of matter • Yield and atom economy • Chemical cells & fuel cells • Synthetic & naturally occurring polymers 	<p>Content:</p> <ul style="list-style-type: none"> • Atoms & isotopes • Atoms & nuclear radiation • Hazards & uses of radioactive emissions and of background radiation (Physics only) • Nuclear fission & fusion • Black body radiation (Physics only)
2	<p>Environmental Science</p> <p>Fertile Q: How can we use biological resources sustainably?</p> <p>Content:</p> <ul style="list-style-type: none"> • How materials are cycled • Decomposition • Impact of environmental change • Waste management • Land Use • Deforestation • Global warming 	<p>Topic: Human Chemistry</p> <p>Fertile Q: Will humans be able to reverse the effects they've had on the Earth's chemistry?</p> <p>Content:</p> <ul style="list-style-type: none"> • Composition and evolution of the Earth's atmosphere • Using the Earth's resources and obtaining potable water • Life cycle assessment and recycling • Using materials (Chemistry only) • The Haber process and the use of NPK 	<p>Topic: Light</p> <p>Fertile Q: How can we use lenses to correct poor vision?</p> <p>Content:</p> <ul style="list-style-type: none"> • Reflection of waves • Refraction • Lenses (Physics only) • Visible light (Physics only)

		fertilisers (Chemistry only)	
3	<p>Topic: Homeostasis</p> <p>Fertile Q: How does our body maintain its conditions?</p> <p>Content: Homeostasis</p> <ul style="list-style-type: none"> • Human nervous system • Control of body temperature • Human endocrine system • Control of blood glucose • Maintaining water and nitrogen balance 	<p>Topic: Quantitative Chemistry</p> <p>Fertile Q: How do I know how much of a product will be produced?</p> <p>Content:</p> <ul style="list-style-type: none"> • Relative atomic mass • Conservation of mass and balanced chemical equations • Relative formula mass • Mass changes when a reactant or product is a gas. • Chemical measurements • Moles • Amounts of substances in equations • Using moles to balance equations • Limiting reactants • Concentration of solutions • Using concentrations in mol/dm³ (Chemistry only) • Use of amount of substance in relation to volumes of 	<p>Topic: Application/ Triple Content</p> <p>Fertile Q: How do scientists use Physics?</p> <p>Content:</p> <p>Double:</p> <ul style="list-style-type: none"> • Review RPs • Project work • Revision <p>Triple:</p> <ul style="list-style-type: none"> • Review Space • HT content

		<p>gases (Chemistry only)</p> <ul style="list-style-type: none"> • Titrations 	
4	<p>Revision Paper 1</p> <p>Content:</p> <ul style="list-style-type: none"> • Cell Biology • Organisation • Infection & Response • Bioenergetics 	<p>Topic: Revision - Paper 1</p> <p>Content:</p> <ul style="list-style-type: none"> • Atomic Structure & Periodic Table • Bonding, structure and the properties of matter • Quantitative chemistry • Chemical changes • Energy changes 	<p>Topic: Revision - Paper 1</p> <p>Content:</p> <ul style="list-style-type: none"> • Energy • Electricity • Particle Model of Matter • Atomic Structure
5	<p>Topic: Revision - Paper 2</p> <p>Content:</p> <ul style="list-style-type: none"> • Homeostasis & Response • Inheritance Variation & Evolution • Ecology 	<p>Topic: Revision - Paper 2</p> <p>Content:</p> <ul style="list-style-type: none"> • The rate and extent of Chemical Change • Organic Chemistry • Chemical analysis • Chemistry of the atmosphere • Using resources 	<p>Topic: Revision - Paper 2</p> <p>Content:</p> <ul style="list-style-type: none"> • Forces • Waves • Magnetism & Electromagnetism • Space (Physics only)