



**SUBJECT: Science Curriculum Pathway**

**KS3: Exploring Science**

**KS4: Combined Science and Separate Science**

**CURRICULUM INTENT:** The Science faculty aim to ensure students achieve a depth of knowledge through varied and imaginative learning activities which include practical work, demonstrations and an underpinning of how Science works. This builds on KS2 Science.

Our curriculum across both KS3 and KS4 encourages students to have resilience and confidence in the Science that they have been taught in order to apply it to unfamiliar situations. This is achieved by highlighting links between the 3 Sciences and their relevance to the wider world. We have a holistic approach to support the students in becoming well rounded citizens. This is achieved through the social, spiritual, cultural and moral topics that Science can raise.

At KS3, rationales for each lesson are in place ensuring that students are regularly visiting How Science Works skills as well as understanding the key principles.

Students are challenged on the depth of their scientific understanding and vocabulary through regular oral and written assessment. In order to reinforce this, all assessments are followed by feedback lessons to clarify misunderstandings and to celebrate success. This also gives students the opportunity to reflect on their performance and plan their next steps.

**CURRICULUM OVERVIEW:**

Year	AUTUMN TERM	SPRING TERM	SUMMER TERM
<b>7</b>	Introductory lessons Baseline tests Particles Forces Cells Mixtures & Separation	Sound Acids & Alkalis Reproduction Energy Muscles & Bones Current	Ecosystems Atoms, Elements & Molecules Revision End of year assessment Summer Science Projects
<b>8</b>	Earth & Space Periodic Table Food & Nutrition Fluids Combustion Breathing & Respiration	Light Metals & Their Uses Rocks Plant Reproduction Unicellular Organisms Energy Transfers	Revision End of year assessment  <b>Year 9 Topics</b> Forces & Motion Plant Growth Reactivity

Year	AUTUMN TERM	SPRING TERM	SUMMER TERM
9	Reactivity Genetics & Evolution Force Field & Electromagnets Forces & Motion Making Materials Revision GCSE Baseline Tests	<b>Students begin the GCSE Content from the Edexcel syllabus</b> Key Concepts in Biology States of Matter Methods of separating substances <b>Start the topics:</b> Waves Light & Electromagnetic Spectrum	<b>Complete the topics:</b> Waves Light & Electromagnetic Spectrum  Atomic Structure Periodic Table Radioactivity
10	<p><b>Combined Science pathway/Separate sciences:</b> Students continue the GCSE content from the Edexcel syllabus.</p> <p><b>Combined Science:</b> Higher sets will study the higher content. All students will have 2 teachers who will teach units from all 3 science on a unit rotational basis. This ensures that students experience each of the 3 Sciences regularly.</p> <p><b>Separate Science:</b> Students will have 3 teachers who will teach units from each Science</p> <p>Students will complete required practicals as set by the exam board, working scientifically and mathematical skills are embedded throughout lessons. Students are assessed at the end of each topic.</p> <p>Mock exams take place in the summer term.</p>		
11	<p><b>Combined Science pathway:</b> Students continue to study the remaining units.</p> <p><b>Separate Science pathway:</b> Students continue to study the remaining units.</p> <p>2 sets of mock exams, one at the end of the Autumn term and one after Easter.</p>		

Throughout the Combined and Separate Science pathways, the students study the following:

<p><b><u>Biology:</u></b></p> <ul style="list-style-type: none"> <li>• Key concepts in Biology</li> <li>• Cells and control</li> <li>• Genetics</li> <li>• Natural selection and genetic modification</li> <li>• Health, disease and the development of medicines</li> </ul>	<p><b><u>Chemistry:</u></b></p> <ul style="list-style-type: none"> <li>• States of matter</li> <li>• Methods of separating and purifying substances</li> <li>• Atomic structure</li> <li>• The periodic table</li> <li>• Ionic bonding</li> </ul>	<p><b><u>Physics:</u></b></p> <ul style="list-style-type: none"> <li>• Motion</li> <li>• Motion and forces</li> <li>• Conservation of energy</li> <li>• Waves</li> <li>• Light and the electromagnetic spectrum</li> <li>• Radioactivity</li> </ul>
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<ul style="list-style-type: none"> <li>• Plant structures and their functions</li> <li>• Animal co-ordination, control and homeostasis</li> <li>• Exchange and transport in animals</li> <li>• Ecosystems and material cycles</li> </ul>	<ul style="list-style-type: none"> <li>• Covalent bonding</li> <li>• Types of substance</li> <li>• Acids and alkalis</li> <li>• Calculations involving masses</li> <li>• Electrolytic processes</li> <li>• Obtaining and using metals</li> <li>• Reversible reactions and equilibria</li> <li>• <b>Transition metals, alloys and corrosion*</b></li> <li>• <b>Quantitative analysis*</b></li> <li>• <b>Dynamic equilibria and calculations involving volumes of gases*</b></li> <li>• <b>Chemical cells and fuel cells*</b></li> <li>• Groups in the periodic table</li> <li>• Rates of reaction</li> <li>• Heat energy changes in chemical reactions</li> <li>• Fuels</li> <li>• Earth and atmospheric science</li> <li>• Hydrocarbons</li> <li>• <b>Alcohols and carboxylic acids*</b></li> <li>• <b>Polymers*</b></li> <li>• <b>Qualitative analysis: test for ions*</b></li> <li>• <b>Bulk and surface properties of matter including nanoparticles*</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Astronomy*</b></li> <li>• Energy – forces doing work</li> <li>• Forces and their effects</li> <li>• Electricity and circuits</li> <li>• <b>Static electricity*</b></li> <li>• Magnetism, and the motor effect</li> <li>• Electromagnetic induction</li> <li>• Particle model</li> <li>• Forces and matter</li> </ul>
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**\*Separate Science topics only – some other topics may be extended in length and require a greater depth of knowledge. There are also additional practical requirements in the Separate Science course.**

**GCSE EXAM BOARD: EDEXCEL**

Syllabus:

Combined Science: 1SC0

Biology: 1BIO

Chemistry: 1CHO

Physics: 1PH0

There is an opportunity for some students to complete the Entry Level Certificate in Science – Syllabus: Entry Level Certificate in Science (NSC0) and Entry Level Certificate in Further Science (NSF0)

### **USEFUL RESOURCES**

**KS3:** Students have the opportunity to purchase KS3 Knowledge organisers and Knowledge Retrieval Books through the school, BBC Bitesize, YouTube.com s-cool.com, Seneca and many more.

**KS4:** Students will have the opportunity to purchase a GCSE revision guide and flash cards through the school. BBC Bitesize, YouTube.com s-cool.com, Seneca, and many more.