

This document contains details of how the subject is sequenced over the years of delivery. Included are assessment points and the prior learning that will be included in these assessments. It also includes where topics are revisited to maximise student retrieval and retention. Along with curriculum content, opportunities to develop links with careers are also identified in order to bring the relevance of the curriculum into the wider life context.

Curriculum Intent Statement

The purpose of our Key Stage 3 scheme is to provide robust foundations to allow students to develop into analytical, methodical, and innately inquisitive scientists, students should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. The three disciplines are split into topics which are introduced in Year 7 and built upon in Year 8, covering the Big Ideas of Science (as outlined by ASE). Students are encouraged to examine the consequences of scientific discoveries, and develop opinions based upon fact, with the intent of developing self-confident, resilient and scientifically literate citizens of the world.

Teaching is focused on the scientific method and students are given opportunities within lessons to build the necessary skills to suggest a hypothesis, collate valid data and make logical conclusions, using knowledge shared with them. Students are assessed on their mastery of knowledge and the application of this knowledge in both 'real world' and investigative science.

The aim of Year 9 is to bridge the gap between Key Stage 3 and GCSE, further developing students' knowledge and investigative abilities. The chosen topics allow students to dive deeper into the 10 Big Ideas, first introduced in Key Stage 3. The sequence of topics allows students to connect knowledge from all three disciplines of science, whilst the time dedicated to independently led investigative approaches promotes curiosity and resilience when discovering answers to posed questions. Some content from year 7 and 8 has been reintroduced to cover concepts covered during the national lockdowns.

Good habits are reinforced at every possible opportunity: scientific language is used, maths skills are modelled, recall of key knowledge is reinforced and students are given opportunities to both ask and answer questions using experimental approaches.

Our Key Stage 4 students follow the AQA GCSE specification. Throughout Year 10, knowledge from previous years is built upon as new content is introduced in line with the Trilogy science specification.

Students undertaking the combined trilogy pathway spend Year 11 consolidating knowledge gained in earlier years, focusing on application of recall to different situations, and the development of analytical, mathematical and evaluative skills, allowing a deeper understanding of topics identified using data from mock assessments. Students also undertake ‘Flashback’ lessons with a focus on recall of information and development of different skills, thus allowing them to access the exam papers.

Year 7

Year 7 assessment dates

Assessment week 1 – 06.01.2025

Assessment week 2 – 28.04.2025

Term	Content	Sequencing	Assessment	Careers links & Experiences
Autumn 1	<p>Topic: Introduction to science and safety in a lab</p> <p>Lab Safety</p> <p>Lab Equipment</p> <p>Using a Bunsen burner</p> <p>Taking scientific measurements</p>	<p>Previous topics built on in this topic:</p>	<p>Consolidation/Summative assessment:</p>	<p>Metrologist Explore careers National Careers Service</p>

	<p>Topic: B1 Cells</p> <p>Cell parts (Animal) Cell parts (plants) Prokaryotic vs Eukaryotic Cells Microscopes planning session Observing cells Specialised cells (animal) Specialised cells (plant) Stem Cells Cells > Tissues > Organs Skeletons (introduce ligaments and tendons) How do muscles move bones (muscle tissue) Chicken wing dissection</p>		<p>Science Baseline assessment</p> <p>End of topic B1 test including recall and skills</p>	<p>Biologist Explore careers National Careers Service</p> <p>Clinical-Scientist Explore careers National Careers Service</p> <p>Microbiologist Explore careers National Careers Service</p> <p>Sports-Scientist Explore careers National Careers Service</p>
--	---	--	--	--

<p>Autumn 2</p>	<p>Topic: P1 Forces and Motion</p> <p>Forces: Measuring forces: Measuring forces: weight Measuring forces: upthrust Forces in action: changing shape Forces in action: changing speed Forces in action: attracting / repelling Forces in action: magnetic fields Forces in action: attracting / repelling Resultant forces: stopping action of forces</p> <p>Topic: C1 Matter</p> <p>Particle model of matter Compression Changing states Dissolving: making mixtures Dissolving at different temperatures Separating rock salt Chromatography Distillation</p>	<p>Previous topics built on in this topic:</p>	<p>Consolidation/Summative assessment:</p> <p>End of topic P1 test including recall and skills</p> <p>End of topic C1 test including recall and skills</p>	<p>Automotive-Engineer Explore careers National Careers Service</p> <p>Aerospace-Engineer Explore careers National Careers Service</p> <p>Civil-Engineer Explore careers National Careers Service</p> <p>Structural-Engineer Explore careers National Careers Service</p> <p>Chemist Explore careers National Careers Service</p> <p>Materials-Engineer Explore careers National Careers Service</p>

	<p>Complete combustion, Incomplete combustion and effects of burning fossil fuels</p> <p>Household acids and alkalis</p> <p>Reactions of metals with acids</p> <p>Neutralisation</p> <p>Metal displacement (copper oxide)</p> <p>Making a concrete block</p> <p>Testing the concrete block</p>		<p>End of topic C2 test including recall and skills</p>	<p>Petroleum engineer job profile Prospects.ac.uk</p> <p>Laboratory-Technician Explore careers National Careers Service</p>
<p>Spring 2</p>	<p>Topic C2: Chemical reactions continued</p> <p>Household acids and alkalis</p> <p>Reactions of metals with acids</p> <p>Neutralisation</p> <p>Metal displacement (copper oxide)</p> <p>Making a concrete block</p>	<p>Previous topics built on in this topic:</p> <p>Year 7 C1</p>	<p>Consolidation/Summative assessment:</p>	

	<p>Testing the concrete block</p> <p>Topic: P2 Energy Energy stores intro and kinetic energy Thermal energy stores Electrostatic energy Chemical energy Magnetic energy store Gravitational Potential Gravitational Potential Elastic potential Elastic potential Pathways</p>	<p>Year 7 P1</p>	<p>End of topic P2 test including recall and skills</p>	<p>https://nationalcareers.service.gov.uk/job-profiles/laboratory-technician</p> <p>Wind-Turbine-Technician Explore careers National Careers Service</p> <p>Domestic-Energy-Assessor Explore careers National Careers Service</p>
<p>Summer 1</p>	<p>Topic: B3 Ecosystems</p> <p>Structure of a plant Photosynthesis Investigating light availability for plant growth Food chains and food webs</p>	<p>Previous topics built on in this topic: Year 7 B2 Reproduction</p>	<p>Consolidation/Summative assessment: Assessment week 2 – 28.04.2025 Multi topic</p>	<p>Forestry-Worker Explore careers National Careers Service</p>

	<p>Why is energy lost in food chains? Predatory- prey cycles Ecosystems Ecosystems under threat? Competition in an ecosystem Courtship behaviour Adaptations- Animals Adaptations- Plants</p>		<p>test on – B1,C1, P1, B2, C2, P2,</p> <p>End of topic B3 test including recall and skills</p>	<p>Tree-Surgeon Explore careers National Careers Service</p> <p>Countryside-Ranger Explore careers National Careers Service</p>
--	--	--	--	---

Year 8

Year 8 assessment dates

Assessment week 1 – 30.09.2024

Assessment week 2 – 03.03.2025

Term	Content	Sequencing	Assessment	Careers links & Experiences
<p>Summer 2</p>	<p>Topic: P3 Electricity</p> <p>Drawing circuits, identifying issues with circuits</p> <p>Conductors or insulators</p> <p>PD:</p> <p>What is it and how do we measure it?</p> <p>PD from fruit</p> <p>Cells & brightness of bulb</p> <p>Cells & brightness of bulb continued</p> <p>Series & parallel circuits</p> <p>Current: What is it and how do we measure it?</p> <p>Modelling circuits</p>	<p>Previous topics built on in this topic: Year 7 P2 Energy</p>	<p>Consolidation/Summative assessment:</p> <p>End of topic P3 test including recall and skills</p>	<p>Electricity distribution worker Explore careers National Careers Service</p> <p>Electricity generation worker Explore careers National Careers Service</p> <p>Electronics engineer Explore careers National Careers Service</p>

	Making electromagnets			Electrician Explore careers National Careers Service
Autumn 1	<p>Topic: B1 Organ systems</p> <p>Recap: Cells, Tissues and Organs Digestive System Balanced Diet and Food Groups Food Tests Enzymes Theory (include factors) Enzyme Practical Planning Enzyme Practical Enzymes in washing powders Structure of the lung Mechanism of Breathing Breathing and Exercise planning Breathing and Exercise Practical and Analysis Smoking (links to emphysema)</p>	<p>Previous topics built on in this topic: Year 7 B1 Cells</p>	<p>Assessment week 1 – 30.09.2024</p> <p>Consolidation/Summative assessment:</p> <p>Multi topic test on all topics</p> <p>Sat so far including flash backs to year 7 content</p> <p><u>Y8</u> B1 Organ systems P3 Electricity <u>Y7</u> C2 reactions P2 Energy B3 Ecology P1 Forces and motion (y7) C1 Matter B1 - cells</p>	<p>Explore role of Dietitian Dietitian Explore careers National Careers Service</p> <p>Explore role of physiotherapist Physiotherapist Explore careers National Careers Service</p>

	<p>P1 Forces and Motion</p> <p>What is a vector?</p> <p>What is the difference between distance and displacement</p> <p>What is the unit of force?</p> <p>What is the unit of mass?</p> <p>Why do we take repeat readings?</p> <p>When does a graph show direct proportionality?</p> <p>How do we tell which set of results are the most precise?</p> <p>How do we calculate resultant force</p> <p>Why are cars and other vehicles streamlined?</p> <p>What is acceleration?</p> <p>What is deceleration?</p>	<p>Year 7 P1 and P2</p>	<p>End of topic test on P1</p>	<p>Ferrari formula 1 careers link Ferrari: Formula One Careers Resource Pack [Ages 11-16] (twinkl.co.uk)</p> <p>Explore role of collisions investigator Forensic collision investigator Explore careers National Careers Service</p>
<p>Autumn 2</p>	<p>Topic: C1 Matter Recap atomic structure & PEN etc</p>	<p>Previous topics built on in this topic: C1 Matter – Y7 content</p>	<p>Consolidation/Summative assessment:</p>	<p>Nanotechnologist Explore careers National Careers Service</p>

	<p>Making models of atoms from sweets: what have you used to represent each part & why</p> <p>History of the atom: development</p> <p>Group 1</p> <p>Group 7 – boiling points</p> <p>Group 0</p> <p>Metals & non-metal properties</p> <p>Explaining properties of metals with relation to structure</p> <p>History of the periodic table – linking to same group = same properties</p> <p>Recap: SLG & change of states</p> <p>Modelling changes of state & scientific language behind it (think physics GCSE)</p> <p>Stearic acid practical</p> <p>Changes of states: pure & mixtures</p> <p>Melting and boiling points of mixtures compared to pure substances</p> <p>Melting and boiling point analysis</p> <p>B2 Hormones</p> <p>Puberty</p> <p>Menstrual cycle: Physical changes</p> <p>Menstrual cycle: Hormonal changes</p> <p>Contraception</p> <p>IVF</p> <p>The endocrine system</p> <p>How is blood sugar controlled?</p> <p>Diabetes</p> <p>Testing for diabetes- Practical</p> <p>Artificial insulin (GM)</p> <p>How are water levels controlled?</p> <p>Fight or flight response</p> <p>How is metabolism controlled?</p>	<p>Year 7 B2 content</p>	<p>End of C1 test including recall and skills</p>	<p>Materials technician Explore careers National Careers Service</p> <p>Reproductive science and andrology Health Careers</p> <p>Phlebotomist Explore careers National Careers Service</p>
--	--	--------------------------	---	--

	<p>Exothermic and Endothermic Reactions – Energy profiles (+ bond energies?)</p> <p>Composites</p>		<p>End of C2 test including recall and skills</p>	
<p>Spring 2</p>	<p>Topic:</p> <p>P4 Space</p> <p>Planet Earth</p> <p>Seasons</p> <p>Phases of the Moon</p> <p>Satellites</p> <p>Eclipses</p> <p>The Solar System</p> <p>Stars</p> <p>Galaxies</p> <p>Finding Exoplanets</p> <p>Data from Space</p>	<p>Previous topics built on in this topic:</p>	<p>Consolidation/Summative assessment:</p> <p>End of P4 Assessment including recall and skills</p>	<p>Research scientist Explore careers National Careers Service</p> <p>Astronomer Explore careers National Careers Service</p>

	<p>Could we live on Mars?</p> <p>P3 Electricity Circuit basics recap Measuring current & voltage in series & parallel (recap) What is resistance? Resistance in a filament bulb Resistance in a filament bulb Filament bulbs vs LEDs Using resistors in real life Resistance in a wire Resistance calculations Resistors in series Static electricity Static shocks</p>	<p>P3 Electricity (end of year 7 – Following June half term)</p>	<p>End of P3 test including recall and skills</p>	<p>Electronics engineer Explore careers National Careers Service</p>
<p>Summer 1</p>	<p>Topic: B3 Ecology</p> <p>Cell parts and Specialised cells (recap) Photosynthesis and limiting factors Measuring the rate of photosynthesis (planning)</p>	<p>Previous topics built on in this topic: Year 7 B3 B1 Cells & B1 Organ systems</p>	<p>Consolidation/Summative assessment: End of B3 test including recall and skills</p>	<p>Environmental consultant Explore careers National Careers Service</p>

	<p>Measuring the rate of photosynthesis (practical/ analysis) Structure of the leaf Investigating stomata Phloem and the xylem Investigating transpiration (Requisition needs to be put in 2 weeks in advance to allow for set up) Mass flow hypothesis (Challenge lesson) How are xerophytes adapted? Root hair cells How plants use glucose Pollution indicators</p>			
--	--	--	--	--

Year 9

Year 9 assessment dates

Assessment week 1 – 09.12.2024

Assessment week 2 – 31.03.2025

Term	Content	Sequencing	Assessment	Careers links & Experiences
<p>Summer 2</p>	<p>Topic: B3 Ecology</p> <p>Cell parts and Specialized cells (recap)</p> <p>Photosynthesis and limiting factors</p> <p>Measuring the rate of photosynthesis (planning)</p> <p>Measuring the rate of photosynthesis (practical/ analysis)</p> <p>Structure of the leaf</p> <p>Investigating stomata</p> <p>Phloem and the xylem</p> <p>Investigating transpiration</p> <p>Mass flow hypothesis (Challenge lesson)</p> <p>How are xerophytes adapted?</p> <p>Root hair cells</p> <p>How plants use glucose</p> <p>Pollution indicators</p>	<p>Previous topics built on in this topic:</p> <p>Year 7 & 8 B3</p>	<p>Consolidation/Summative assessment:</p> <p>End of topic assessment on B3 including recall and skills</p>	
<p>Autumn 1</p>	<p>Topic: P1 Forces and Motion</p> <p>Recap</p>	<p>Previous topics built on in this topic:</p>	<p>Consolidation/Summative assessment:</p>	

	<p> Introducing speed & calculating speed Measuring speed over time Drawing DT graphs (NOT displacement) Interpreting distance-time graphs Velocity-time graphs Parachutes & air resistance Graph for parachute Velocity-time graphs for parachute Investigating terminal velocity - practical Investigating terminal velocity - analysis Terminal velocity in cars Braking forces & car safety Braking forces & work done How powerful are your muscles? </p> <p> Topic: B1 Transport The heart Heart disease Impact of diet and exercise on the respiratory and circulatory systems Recap: Cells, Tissues and Organs Diffusion Diffusion at different temperatures practical SA: Volume & diffusion SA: Volume & diffusion practical SA of leaves Structure of leaves Stomata practical Osmosis theory </p>	<p>Year 7 and 8 P1</p>	<p>End of topic assessment on p1 including recall and skills</p> <p>End of topic assessment on B1 including recall and skills</p>	<p> Automotive-Engineer Explore careers National Careers Service </p> <p> Motorsport-Engineer Explore careers National Careers Service </p> <p> Air-Accident-Investigator Explore careers National Careers Service </p>
--	---	-------------------------------	---	---

	<p>Osmosis Are sweet potatoes sweeter?- Osmosis practical Active transport</p>			<p>Healthcare-Science-Assistant Explore careers National Careers Service</p> <p>Health-Promotion-Specialist Explore careers National Careers Service</p> <p>Hospital-Doctor Explore careers National Careers Service</p>
<p>Autumn 2</p>	<p>Topic: C1 Matter Recap lesson: pure vs mixtures elements vs compounds Practical applications of separating mixtures: Desalination of water Practical applications of separating mixtures: fractional distillation Practical applications of separating mixtures: chromatography Practical applications of separating mixtures: chromatography to identify food colourings - method writing & do practical Practical applications of separating mixtures: potable water – which has the most dissolved minerals - evaporation Data analysis of separating mixtures Conservation of mass principle: reaction in contained conical flask vs heating wire wool Writing word equations From words to formula Balancing equations Density related to particle model & calculating density of regular Density of irregular objects: which is real gold?</p>	<p>Previous topics built on in this topic: Year 7 and 8 C1</p>	<p>End of topic assessment on C1 including recall and skills</p>	<p>Chemical-Engineering-Technician Explore careers National Careers Service</p> <p>Chemical-Engineer Explore careers National Careers Service</p>

	<p>Topic: P2 Energy Transfer by Waves</p> <p>Waves basics</p> <p>Waves transfer energy and calculations</p> <p>EM Spectrum: communication</p> <p>EM Spectrum: waves for heating</p> <p>EM Spectrum: reflection</p> <p>EM Spectrum: refraction</p> <p>EM Spectrum: colours</p> <p>Application of Absorption and emission of radiation</p> <p>EM spectrum: uses</p> <p>Dangers of high energy EM waves</p> <p>Properties and uses of EM waves</p> <p>Sound waves</p> <p>Measuring the speed of sound</p> <p>Sounds we can't hear: Ultrasound</p> <p>Sounds we can't hear: Infrasound</p>	<p>Year 7 and 8 P2</p>	<p>Assessment week 1 – 09.12.2024</p> <p>Consolidation/Summative assessment:</p> <p>Multi topic assessment – including B1, B3, C1, P1, P2 and some flash backs to year 8 content.</p>	<p>Radiographer Explore careers National Careers Service</p> <p>Studio-Sound-Engineer Explore careers National Careers Service</p> <p>Audio-Visual-Technician Explore careers National Careers Service</p>
<p>Spring 1</p>	<p>Topic: B2 DNA and Inheritance</p> <p>Asexual reproduction</p> <p>Sexual reproduction</p> <p>Cell division</p>	<p>Previous topics built on in this topic: Year 7 & 8 B2</p>	<p>Consolidation/Summative assessment:</p>	<p>Becoming a Genetic Counsellor - AGNC</p>

	<p>Cell structure recap and DNA structure</p> <p>Extracting DNA</p> <p>Making DNA models</p> <p>Discovery of DNA</p> <p>Human Genome Project</p> <p>Inheritance</p> <p>Cystic fibrosis as genetic disorder</p> <p>Genetic v environmental</p> <p>Continuous v discontinuous variation</p> <p>Cloning: Plant cloning</p> <p>Cloning: Whole cell cloning</p> <p>Genetic modification</p> <p>Natural selection</p> <p>Extinction</p>		<p>End of topic assessment on B2 including recall and skills</p>	<p>Geneticist Explore careers National Careers Service</p>
<p>Spring 2</p>	<p>Topic: C2 Chemical Reactions</p> <p>Reactivity series</p> <p>Reactivity series – Practical</p> <p>Balancing chemical equations</p> <p>Displacement reactions – Halogens</p> <p>Metals/oxides/hydroxides/carbonates + acid</p> <p>Collision theory – factors affecting rate of reaction</p> <p>Investigating the effect of concentration on rate – Planning</p> <p>Investigating the effect of concentration on rate – Data analysis</p> <p>The effect of surface area on rate of reaction – Data task/practical and analysis in one lesson</p> <p>Investigating the effect of temperature on rate – Planning</p>	<p>Previous topics built on in this topic:</p> <p>Year 7 and 8 C2</p>	<p>End of topic assessment on C2 including recall and skills</p>	<p>Water-Treatment-Worker Explore careers National Careers Service</p>

	<p>Investigating the effect of temperature on rate– Data analysis Exothermic and Endothermic reactions Energy changes - calcs Catalysts – elephant’s toothpaste Polymers, ceramics, composites etc</p> <p>Topic: P3 Electricity Recap key electricity terminology Making electromagnets Generator effect Using fossil fuels to generate electricity Using alternate resources</p>		<p>Assessment week 2 – 31.03.2025</p> <p>Multi topic assessment including topics: C1, C2, B1, B2, B3, P1, P2</p> <p>Consolidation/Summative assessment:</p>	<p>Electricity-Distribution-Worker Explore careers National Careers Service</p> <p>Electronics-Engineering-Technician Explore</p>
--	--	--	---	---

				careers National Careers Service Electronics-Engineer Explore careers National Careers Service
Summer 1	Topic: P3 Electricity Continued The national grid Safety around electric pylons etc Wiring a plug Testing fuses: planning Testing fuses: practical Power & efficiency of appliances Electric cars vs petrol cars Topic B3 Ecology Food chains/ webs recap Pyramids of biomass Efficiency in food chains	Previous topics built on in this topic: Year 8 P3	Consolidation/Summative assessment: End of topic assessment on P3 including recall and skills	



BBG Academy Curriculum 2024-2025 – Science

				<p>Climate-Scientist Explore careers National Careers Service</p> <p>Offshore-Drilling-Worker Explore careers National Careers Service</p> <p>Environmental-Consultant Explore careers National Careers Service</p>
--	--	--	--	---



BBG Academy Curriculum 2024-2025 – Science