



Our Vision:

To develop aspirational learners who strive for excellence academically, creatively and culturally, benefitting from a wide range of opportunities led by inspirational educators.

**Science Curriculum
Overview Mapping**

Year Group	Curriculum Intention	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	<p>“Novice” = Developing context and the general rules and laws of several scientific processes.</p> <p>Challenge pupils to: Develop and appetite to construct their own ideas that although deviate from the “rules” show extension of the scientific principles</p>	Introductory science + Force + Matter	Organisms + Energy	Reactions +	Electromagnets + Genes +	Waves +	Ecosystems + Earth
Year 8	<p>“Advanced Beginner” = Increasing situational perception and competency.</p> <p>Challenge pupils to: Develop the understanding of causal effect and deliberate planning of scientific investigations.</p>	Forces + Matter	Organism +	Electromagnets + Reactions	Ecosystem	Energy + Genes	Waves + Earth

Year 9	<p>“Competent” = Learners are now able to apply their classroom science to the wider world and how their learning links with possible career options.</p> <p>Challenge pupils to: Communicate with the correct scientific keywords.</p>	Introductory Science, Pathogens	Atomic model/ Structure & Bonding	Chemical reactions	Chemical reactions / Cell transport / Chemical calculations	Climate change 1	Climate change 2
Year 10	<p>“Proficient scientist” = Learners are now able to take their KS3 knowledge and develop it further to become proficient in the subject</p> <p>Challenge pupils to: Link KS3 ideas to higher level thinking.</p>	1 Cell Biology 8 Atomic structure and the PT 18 Energy	20 Particle model of matter 21 Atomic structure 2 Organisation	9 Bonding, structure and the properties of matter 10 Quantitative chemistry 3 Infection and response	11 Chemical changes 12 Energy changes	4 Bioenergetics 19 Electricity	13 The rate and extent of chemical change WEX Cultural Capital Week
Year 11	<p>“Expert scientist” = Learners are now able to complete their GCSE studies and progress to their exams.</p> <p>Challenge pupils to: Apply their knowledge in an intuitive way to unfamiliar situations.</p>	4 Bioenergetics 13 The rate and extent of chemical change 5 Homeostasis and response	PPE 1s 14 Organic chemistry 22 Forces	23 Waves 24 Magnetism and electromagnetism 15 Chemical analysis 16 Chemistry of the atmosphere	6 Inheritance, variation and evolution 7 Ecology PPE 2s	17 Using resources GCSE revision	GCSE exams
Year 12 Biology	<p>A level Biology is a stepping stone to future study. We have chosen a course that allows students to develop the skills that they will need in future studies. The course allows us to support and inspire our students to nurture a passion for Biology and lay the groundwork for further study in courses like biological sciences, medicine and other science related courses.</p>	Teacher A(4 lessons a fortnight). Section 2- Cells Topic 3- Cell structure 3.1-3.8 Teacher B(6 lessons a fortnight). Section 1- Biological molecules	Teacher A(4 lessons a fortnight) Section 2-Cells Practical 2: Preparing stained squashes of root cells to observe mitosis Section 2 Topic 4. Transport 4.1-	Teacher A(4 lessons a fortnight) Section 2-Cells Topic 4. Transport across cell membranes. 4.4-4.5 Core Practical 3: Practical 3 Dilution series to find water potential of plant tissues Topic 5. Cell recognition and	Teacher A(4 lessons a fortnight). Section 2- Cells Topic 5. Cell recognition and immune system, 5.4-5.7. Section 4; genetic information, variation and relationship. Topic 8. Genetic	Teacher A(4 lessons a fortnight). Section 4; genetic information, variation and relationship. Topic 8. Genetic information 8.3-8.5 Topic 9 . Genetic diversity	Teacher A(4 lessons a fortnight). Section 4; genetic information, variation and relationship. Topic 9 . Genetic diversity 9.3-9.4 Practical catch up Practical 6: Use of aseptic techniques to investigate the

	AQA Biology A-level gives students the skills to make connections and associations with all living things around us. Being such a broad topic, it aims to encourage students to find a specific area of interest, plus it opens the door to a fantastic range of interesting careers.	Topic 1. Biological molecules 1.1-1.6	4.3 Core practical 4. Effect of a named variable on the permeability of cell -surface membrane. Teacher B(6 lessons a fortnight. Section 1. Biological molecules 1.6-1.9 Core Pract.1. Investigation into the effect of a named variable on enzyme-controlled reaction. Topic 2- Nucleic acid 2.1- structure of RNA.	immune system, 5.1-5.3 Teacher B(6 lessons a fortnight. Section 1- Biological molecules. Topic 2- Nucleic acid 2.2-2.4. Section 3 – Organisms exchange substances with their environment Topic 6 Exchange 6.1-6.4	information, variation and Relationships between organisms 8.1-8.2. Teacher B(6 lessons a fortnight. Section 3 – Organisms exchange substances with their environment Topic 6 Exchange 6.5-6.9 Topic 7: Mass Transport. 7.1-7.2	9.1-9.2 Teacher B(6 lessons a fortnight. Section 3 – Organisms exchange substances with their environment Topic 7: Mass Transport. 7.3-7.9 Core Practical 5: Dissection of animal or plant gas exchange or mass transport system or of organ within such a system Section 4; genetic information, variation and relationship. Topic 10 : Diversity 10.1	effect of antimicrobial substances on microbial growth . Teacher B(6 lessons a fortnight. Section 4; genetic information, variation and relationship. Topic 10 : Diversity 10.2-10.5 Practical catch up
Year 13 Biology	A level Biology is a steppingstone to future study, we have chosen a course that allow students to develop the skills that they will need in future studies. The course allows us to support and inspire our students to nurture a passion for Biology and lay the groundwork for further study in courses like biological sciences, medicine and other science related courses.	Teacher A.(4 lessons a fortnight) Section 5. Energy Transfer in and between organisms. Topic 11 Photosynthesis Topic 12:	Teacher A.(4 lessons a fortnight). Core practical7 Core Practical 8 Core practical catch up Section 5. Energy Transfer in and between organisms Topic	Teacher A.(4 lessons a fortnight) Section 7: Genetics , populations, evolutions and ecosystem. Topic 17: inherited change Teacher B(6 lessons a fortnight)	Teacher A.(4 lessons a fortnight) PPE Section 7: Genetics , populations, evolutions 17.8: Epistasis 17.9: Chi square	Teacher A.(4 lessons a fortnight) Catch up core practical 18.4 Selection and evolution 18.5 Isolation and speciation Teacher B(6	Teacher A.(4 lessons a fortnight) Revision/Exam Teacher B(6 lessons a fortnight) Revision/Exam

	AQA Biology A-level gives students the skills to make connections and associations with all living things around us. Being such a broad topic, it aims to encourage students to find a specific area of interest, plus it opens the door to a fantastic range of interesting careers.	Respiration Topic 13: Energy and ecosystem Teacher B(6 lessons a fortnight) Section6. Organisms respond to changes in their environments Topic 14. Response to Stimuli Topic 15. nervous coordination and muscles.	13: Energy and ecosystem Teacher B(6 lessons a fortnight) PPE Section6. Organisms respond to changes in their environments Topic 16. Homeostasis Section 8; The control of Gene expression Topic 20. Gene expression. 20.1-20.4	Section 8; The control of Gene expression Topic 20. Gene expression 20.5-20.6 Topic 21: Recombinant DNA technology 21.1- 21.5	Topic 18. Populations and evolutions 18.1:Population genetics 18.2: Phenotype 18.3: Natural selection Teacher B(6 lessons a fortnight) PPE Core Practical 11 Section 7: Genetics , populations, evolutions and ecosystem. Topic 19.1-19.7	lessons a fortnight). Catch up core practical Revision	
Year 12 Chemistry	The course helps to bring the subject to life and inspire students to achieve more. It is a teacher-friendly specification based on extensive research and engagement with the teaching community. The course is designed to be straightforward and accessible so that the delivery is tailored to suit the needs of the students. We aim to encourage learners to develop the basic skills required, to become responsible for their own learning, confident in discussing ideas, innovative and engaged.	Module 2: Atoms ions and compounds; Amount of substance; Compounds; acids & Redox	Module 2: Electrons and bonding; shapes of molecules and intermolecular forces; Module 4: Basic concepts of organic Chemistry	Module 3: Periodicity, Reactivity trends and Enthalpy Module 4: Alkanes, alkenes and alcohols	Module 3: Reaction rates Module 4: Haloalkanes, organic synthesis	Module 3: Equilibrium Module 4: Spectroscopy Revision	A2: Module 5: Rates of reaction Module 6: Aromatic Chemistry
Year 13 Chemistry	The course helps to bring the subject to life and inspire students to achieve more. It is a teacher-friendly specification based on extensive research and engagement with the teaching community. The course is designed to be straightforward and accessible so that	Module 5 (Physical chemistry): Equilibrium, Module 6 (Organic	Module 5: Acids, bases and pH; Buffers and neutralisation Module 6:	Module 5: Enthalpy and Entropy; Redox and electrode potential Module 6: Organic	Module 5: Transition Elements and Revision of Physical and Inorganic	Revision and practice	External exams

	the delivery is tailored to suit the needs of the students. We aim to encourage learners to apply the basic skills acquired in the previous year. At this stage students are to a large extent responsible for their own learning and should be confident in discussing ideas, innovative and engaged. They should be able to apply the concepts learnt to world issues.	Chemistry): Carbonyl compounds	Amines, amino acids and polymers	synthesis; Chromatography	chemistry Module 6: Spectroscopy and Revision of Organic Chemistry		
Year 12 Physics	<p>To develop a working knowledge of base units, measurement instrumentation and errors.</p> <p>To introduce students to the fundamental properties of matter, em radiation and quantum phenomena and the importance of international collaboration.</p> <p>To extend knowledge of waves by considering refraction, diffraction, superposition and interference.</p> <p>To introduce and develop vector knowledge and increase understanding of forces, energy, linear motion and momentum.</p> <p>To consider the bulk properties and tensile strengths of materials.</p> <p>To build on and develop GCSE knowledge of current electricity and develop practical skills.</p> <p>To extend knowledge of circular motion.</p>	<p>Measurements and their errors. AS Topic 1</p> <p>Particles AS Topic 2</p>	<p>Radiation AS Topic 2</p> <p>Waves section 1 AS Topic 3</p>	<p>Waves section 2 AS Topic 3</p> <p>Materials AS Topic 4</p>	<p>Mechanics AS Topic 4</p>	<p>Electricity AS topic 5</p>	<p>Circular motion A level Topic 6</p>
Year 13 Physics	<p>To introduce and build mastery of simple harmonic motion and systems, to introduce the phenomenon of resonance in systems.</p> <p>To review Thermal energy transfers and build practical skills</p> <p>To review the gas laws and introduce and build mastery of the theory of the ideal gas and the molecular kinetic theory model of a gas.</p> <p>To investigate electric, gravitational and magnetic fields and build knowledge of their consequences by derivation of equations and real world examples.</p> <p>To review Radioactivity and make links to</p>	<p>Simple harmonic motion A Level Topic 6</p> <p>Thermal Physics A Level topic 6</p>	<p>Gravitational and Electric Fields A level Topic 7</p>	<p>Magnetic fields A Level Topic 7</p> <p>Nuclear Physics Part 1 A level Topic 8</p>	<p>Nuclear Physics part 2 A level Topic 8</p> <p>Medical Physics Option Part 2</p>	<p>Medical Physics Option part 1</p>	

	<p>the particles topic from Year 12.</p> <p>To build knowledge of radioactive decay and the decay equations and their applications in the real world, to consider the operation and constraints of Nuclear fission and fusion power stations making links to Einstein's equation.</p> <p>To review and increase knowledge of the physics of vision, defects and their correction using lenses</p> <p>To consider the ear as a sound detection system and make links to sensitivity, frequency response and hearing defects.</p> <p>To review and extend work on non- invasive diagnostic techniques, the ECG, Ultrasound scanning including A and B scans, endoscopy building on knowledge of fibre optics and MR scans.</p> <p>To review and build knowledge of ionising imaging techniques, x-ray, gamma scans, CT scans and their enhancements</p> <p>To investigate radionuclide imaging techniques considering, half life, common isotopes and effective, biological and physical half lives</p>						
--	---	--	--	--	--	--	--

