The curriculum is designed so that students of all abilities make progress towards developing the skills required, whilst forming a solid understanding of a range of scientific concepts. Students will have the opportunity to use the most common apparatus and techniques (including measurement) that they will use throughout their years of studying science. Students will also learn how to carry out specific procedures and protocols safely and with proficiency in the laboratory (and later field work), this is important for enabling progression on to science beyond GCSE, A-level and University. Students will gain the knowledge that all measurements involve some error and how scientist put steps in place to reduce this. The first term will introduce students to seven influential scientists and their works, with the aim of introducing methods that scientists have used to answer questions. This will then lead into the core units for each discipline. In Chemistry this includes learning about elements, compounds and how to navigate the periodic table. Pupils will find out how discoveries about atomic structure led to the development of the periodic table. In Biology, pupils will learn about the structure of plant and animal cells, how cells become specialised and why cellular processes like respiration and photosynthesis are fundamental to life. In Physics, pupils will learn why forces are so important, how objects interact with each other and learn about Newton's laws of motion. Transfer of energy involved in all interactions. Pupils will build upon their knowledge of atomic structure and discover how electrons and electricity are related; they will become confident at calculating resistance, current and voltage. Extended writing and mathematical skills within topics will allow pupils to develop their scientific vocabulary and analytical skills.

Autumn Term	Cells to organ systems	Chemical changes	Heating and cooling
Key subject knowledge:	This topic builds on the core biology topic in Year 7 and adds complexity by adding multicellular detail. In this topic students will learn how multicellular organisms have a hierarchical organisation of cells, tissues, organs and organ systems that work together to keep the cells alive. This topic supports the development of ideas about cells, tissues and organs in order to build understanding of how organ	In the topic of chemical changes, students will use their Year 7 knowledge of atoms, elements and compounds to look at the way compounds and molecules are made from different types of chemical reactions. Students will learn about the conservation of mass and be introduced to key chemistry skills of how to read and write chemical equations.	Students continue their learning of transferring energy through heat and radiation. In this topic students will be introduced to energy transfer diagrams and consider if any energy transfer can be 100% efficient. This will be covered in both a quantitative and qualitative context. Students will look at the transfer of heat energy through radiation, convection, and conduction.

	systems work together specifically looking at the human body.		
Key disciplinary knowledge:	Using qualitative and semi-quantitative tests to analyse specimens. Preparing microscopic specimens, operating a microscope and scientific drawing. Creating and critiquing models of organ systems.	Modelling chemical bonds for the creation of molecules and during chemical reactions. Carrying-out practical wet lab work and taking measurements to test a hypothesis	Planning a complete experiment, including: hypothesising, method creation, proper communication of results and a conclusion. Predicting based on classic experiments and application of the principles to the students own work.
Summative Assessment Strategies	In-class quiz End of unit test Homework Booklet	In-class quiz End of unit test Homework Booklet	In-class quiz End of unit test Homework Booklet
How does this unit prepare students for future study?	The students are taking the next step toward a more nuanced understanding of the complicated nature of organisms.	Students use the scientific language of reactions and quantities like 'mass' throughout all GCSE, A-level and University courses.	Students are broadening their limited conception of energy in a way that will allow them to decompartmentalise during further study in all 3 sciences.

Spring Term	Health and digestion and disease	Acids and alkalis	Forces in motion - linear motion
Key subject knowledge:	This topic includes content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed. Calculations of energy	In this topic of 'Acids and alkalis' students will build on their year 7 'Core Chemistry' knowledge substances and properties (materials are either made of a single chemical substance or a mixture of substances which each	The topic of 'forces in motion' develops students' understanding of how forces make things change, and start to consider how forces help us predict and control physical change. Students will apply their year 7 core physics

	requirements in a healthy daily diet. The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases. The tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts).	have distinctive properties) and the year 8 topic 'Chemical changes' (during chemical reactions, atoms are rearranged, and new substances are formed) to consider a specific change to two types of substance, neutralisation.	knowledge of balanced and unbalanced forces and how this mechanical transfer of energy will result in changes of speed and direction. This topic will involve many cross-curricular links with Maths as students generate and analyse graphs of motion.
Key disciplinary knowledge	Developing research skills. Consolidating graphic interpretation and communication of complex data sets. Prediction of outcomes based on established principles.	Many opportunities to use and create reagents that test the qualities of solutions. Use and critique of various methods in a wet lab situation. Planning an investigation to solve a real-world problem.	Rearranging the subject of calculations and completing them. delineating between similar but discrete concepts. Graphically representing concepts such as distance and time in a novel and useful way.
Summative Assessment Strategies	In-class quiz Homework booklets End of unit test	In-class quiz Homework booklets End of unit test	In-class quiz Homework booklets End of unit test
How does this unit prepare students for future study?	Students will discard the misconceptions from lay language around diet and health, which can otherwise persist to GCSE and further.	Students are introduced to the concepts and properties of pH, which will reappear in both Biology and Chemistry at GCSE and further.	Students learn how scientists conceive of and communicate their ideas about forces. This allows subsequent study to focus on content rather than 'how to talk about physics'

Summer Term	Organisms and interdependence	Planet Earth and pollution	How we see: Light
Key subject knowledge	This year 8 topic builds on students' KS2 knowledge of how specific organisms interact with their environment to looking macroscopically at not just the interactions within their environment but how all organisms depend on, interact with, and affect the environments in which they live and with the other organisms that live there.	Students will use their prior knowledge of atoms, elements, compounds, and mixtures and apply this to the atmosphere of the Earth. This topic will focus on the concept of how substances can move within and between the atmosphere, hydrosphere, geosphere and biosphere as part of large-scale Earth systems. The students will use the previous topic of 'Chemical changes' – specifically combustion – when learning about the carbon cycle and the composition of the atmosphere. Students will also consider finite resources and the efficacy of recycling, the production of carbon dioxide by human activity and the impact on climate.	In the continuing theme of energy transfer, in year 8 students will build on their year 7 knowledge of waves to radiate information and consider how waves help us to communicate through light waves. This topic covers how the eye works (linking with cellular organisation from their biology topics), the ray model and how light can be transmitted via specular reflection, refracted, absorbed, diffuse scattering.
Key disciplinary knowledge	Using live organisms (insects) in practical experimentation. Interpreting complex depictions of interdependence through food webs.	Description and comparison of chemical reactions. Extrapolation of practical results toward general principles of chemistry. Modelling complex ecological	Use of tangible models to describe difficult and parallel conceptions of light. Use of electrical equipment and glassware to study phenomena.

		interactions in the lab and critiquing these models	Relating our content to the everyday uses (e.g. spectacles)
Summative Assessment Strategies	In-class quiz Homework booklets End of unit test	In-class quiz Homework booklets End of unit test	In-class quiz Homework booklets End of unit test
How does this unit prepare students for future study?	The interconnectedness of all life is a tenet that students should appreciate and continue to keep in mind throughout study.	Students will develop the knowledge to have a meaningful conversation about climate science, contribute to the global conversation using evidence.	The students learn that a concept as familiar to them as light has been described and explored in ways which they had not previously imagined. This curiosity in everyday phenomena is what we try to encourage.