Year 7		Autumn 1		Autumn 2		Spring 1		Spring 2		Summer 1		Summer 2	
		FORCES **BQ11 Physics: How do forces make things happen?**	**SOLID, LIQUID, GAS STATE AND CHANGES OF STATE** **BQ07 Chemistry: What are things made of?**	**CELLS** **BQ01 Biology: What are living things and what are they made of?**	**SOLAR SYSTEM AND BEYOND** **BQ14 Physics: How does the Earth fit into the Universe?**	**SOLUTIONS** **BQ06 Chemistry: How do we explain how substances behave?**	**ECOSYSTEMS** **BQ03 Biology: How do living things live together in their environments?**	**SOUND, LIGHT AND VISION** **BQ12 Physics: How do we see, hear and communicate?**	**HEREDITY AND DNA** **BQ02 Biology: How do living things grow and reproduce?**	**SEPARATION TECHNIQUES** **BQ06 Chemistry: How do we explain how substances behave?**	**HEATING AND COOLING** **BQ10 Physics: Why do materials have different properties?**	**DIFFUSION** **BQ01 Biology: What are living things and what are they made of?**	**HUMAN DIGESTIVE SYSTEM** **BQ01 Biology: What are living things and what are they made of?**
Science and Technology	**Science**	In this module, students will investigate how forces affect our lives, both usefully and not usefully. That forces can be contact or non-contact. Learn how to represent balanced and unbalanced forces on force diagrams, and use them to calculate resultant force and direction Students will also learn the 8 energy stores and how energy is transferred, including the law of conservation of energy	In this module, students will learn the arrangement, movement and energy in a solid, liquid and gas. Identify and describe the changes of state. Explain how the properties of solids, liquids and gases can be explained with particle theory	In this module, students will learn about the organelles found in animal and plant cells, and the function of each cell organelle. The main features of specialised cells and how these features support it to do its job. Students will learn how to use a microscope and describe the differences between unicellular and multicellular organisms	In this module, students will describe our solar system, including ideas about the locations, movements, sizes and distances of the different objects within our solar system, including what stars and galaxies are and explain how they look when seen from Earth. Students will explain the effects of gravity acting towards the centre of a nearby planet, moon or star.	In this module, students will learn what makes a solution, including solvent and solute, and what it means to be soluble. Students will also investigate the factors affecting solubility	In this module, students will learn what producers, consumers and decomposers are and the role they have in an ecosystem. They will learn how food chains are used to represent energy transfers. Students will describe what bioaccumulation is and how this can impact humans	In this module, students will investigate how sound travels in terms of particles and in solids, liquids, gases and in a vacuum. How waves can be viewed and how their form changes when the sound changes. Students will explain how the ear works.	In this module, students will describe what is meant by heredity and why offspring usually look similar to their parents. Students will explain the difference between DNA, chromosomes, genes and the genome.	In this module, students will use their understanding of the properties of solids and liquids to work out how to separate some mixtures, including filtration, evaporation, distillation and chromatography.	In this module, students will describe the difference between temperature and heat and describe how thermal energy can be passed on through conduction, convection and radiation, in solids, liquids, gases and a vacuum.	In this module, students will explain that diffusion is the movement of particles of a substance from an area of higher to lower concentration. Students will apply this knowledge to explain observations of diffusion through jelly cubes (a permeable material) and a semi-permeable membrane.	In this module, students will investigate what digestion is, the parts of the digestive system and how they are adapted for their function. They will learn what nutrients needed for a balanced diet and the foods they are found in.
	Design Technology												
		Pupils are on a carousel and will study these modules at different points in the year depending on their class				During the design stages students will evaluate some existing products. They will use these investigations to design and make their own product using a template. Formal drawing methods and working drawings will be introduced. Students will develop an understanding of natural and manmade boards and will accurately measure and mark out materials while selecting tools relevant for the tasks required to complete their Flower and bug house.				Students will complete a design process where further sketching and drawing skills will be taught to aid in the development of their fuse tester. CAD will be used to draw out their final design. More complex manufacturing techniques to do with electronics and the understanding of circuit components will be used in the project, to produce a working fuse tester. Students will evaluate the success of their product and suggest modifications for improvement.			

	Internet Safety, Cyber Security and Encryption	**Introduction to Spreadsheets**	**Introduction to 3D Printing**
Information Technology 1	The internet has become an essential part of our daily lives. People of all ages rely on the internet for communication, file sharing, entertainment, online shopping, banking, and much more. In this module students will learn that it is important to make sure people can keep themselves safe and keep their data secure. They can do this by, among other things, being conscious of the impact of social media, using anti-malware software and understanding the importance of encryption, which scrambles important data so that others can't understand it.	Spreadsheets are incredibly useful and powerful tools. They are used every day by people in all sorts of ways, from storing information about products and stock levels to managing multi-million-pound budgets. They can be used to store data, perform complex calculations and to create graphs and charts. They are often used to model what might happen in different situations. This unit is focused on using spreadsheets efficiently and effectively to perform a range of activities.	This module will teach students the concept of 3D printing, where it's used in the wider world and why it is used. By the end of the module they will have designed and 3D printed an object and learnt about the basic theory of 3D printing.
	Computing Past, Present & Future	**Programming in Scratch**	**Programming in Python – Sequence**
Information Technology 2	This module develops students' skills with word-processing and presentation software at the same time as giving them an appreciation of the rapidly changing technologies that have brought the computer to where it is today and will immeasurably affect the world they experience as they grow up. The developments in computing over time and the key people responsible for those developments provide an intriguing context that students can use to improve their document formatting and presentation skills. Students will be encouraged to use experimentation, 'Help' or 'Tell me' features and online tutorials to discover for themselves how to use the tools built into applications.	Programming can be broken down into three key constructs: sequence, selection and iteration. When students understand these three key constructs, they will not only be able to demonstrate problem-solving skills in a programming environment but also in everyday life. This module will use Scratch as the mechanism for developing understanding of these concepts using a range of fun block-based programming activities.	This module introduces students to writing a computer program in Python and covers taking inputs from the user, storing them in variables, calculating values using basic arithmetic operators and producing formatted output. The major data types are introduced, along with the key arithmetic operators needed to perform simple calculations in Python. The module also looks at the concept of a list to store and manipulate multiple data items in Python and the basic manipulation of strings.

Year 8		Autumn 1		Autumn 2		Spring 1		Spring 2		Summer 1		Summer 2	
		ATOMS, ELEMENTS AND COMPOUNDS BQ07 Chemistry: What are things made of?	**BIODIVERSITY BQ03 Biology: How do living things live together in their environments?**	**UNDERSTANDING CHEMICAL REACTIONS BQ08 Chemistry: How can substances be made and changed?**	**MOVING BY A FORCE BQ11 Physics: How do forces make things happen?**	**SPECIES AND CLASSIFICATION (DIFFERENCES BETWEEN SPECIES) BQ04 Biology: Why are there similarities and differences between living things?**	**VARIATION (DIFFERENCES WITHIN A SPECIES) BQ04 Biology: Why are there similarities and differences between living things?**	**SERIES CIRCUITS BQ13 Physics: How do electricity and magnetism work?**	**REPRODUCTION IN HUMANSBQ02 Biology: How do living things grow and reproduce?**	**FUELS AND ENERGETICS BQ08 Chemistry: How can substances be made and changed?**	**MAKING IMAGES BQ12 Physics: How do we see, hear and communicate?**	**DIET AND EXERCISE BQ05 Biology: How do living things stay healthy?**	**ACIDS AND BASES BQ08 Chemistry: How can substances be made and changed?**
Science and Technology	**Science**	In this module, students will learn the words element, molecule, atom, mixture and compound. They will learn how symbols are used to represent elements and compounds and name simple compounds made from a metal and non-metal.	In this module, students will describe ways in which organisms are interdependent within ecosystems. Students will describe how some animals are adapted to help them survive, and how environmental conditions affect animal biodiversity.	In this module, students will investigate the properties of metals and nonmetals. They will describe how metals react with oxygen and acids to form new substances.	In this module, students will learn how to calculate speed, distance and time using the equation speed=distance/time. Students will read values of distance and time from graphs, use them to calculate speed and describe the movement of objects.	In this module, students will explain how organisms are classified into groups, and what a species is. Students will use a classification key to identify and classify organisms in their natural habitats.	In this module, students will describe examples of variation between individuals of the same species and explain what causes this variation. Students will describe and measure examples of discontinuous and continuous variation in features and plot appropriate graphs.	In this module, students will investigate what electrical conductors and insulators are and how they are used. Students will learn how circuit symbols are used to draw simple series circuit diagrams	In this module, students will explain how reproduction is linked to inheritance and explain the role of reproduction as part of the life cycle of humans and other organisms.	In this module, students will explain why some changes of state are exothermic and some are endothermic. Students will conduct an investigation to create and analyse cooling curves and identify where state changes are happening on temperature vs time graphs.	In this module, students will learn about reflection and refraction of light, using a practical real-life context, linking the concepts together to explain how an image is formed. Pupils will investigate through building and using a pin-hole camera to form an image.	In this module, students will explain how food is used for growth and repair and to provide energy. Students will investigate the energy content in food and explain how this can lead to lifestyle diseases. Students will plan and carry out an investigation into the effects of exercise on breathing rate or heart rate.	In this module, Students will learn what acids and alkalis are, what pH is and how it can be measured. They will also learn how to name salts, what neutralisation is and some everyday examples of where it might be used.
	Design Technology	**Steady Hand Game**											
		During the design stages students will investigate and evaluate existing steady hand games and design their own, through at iterative design process changing and developing their design as they progress in the design process. They will gain more experience in using CAD and students will develop their understanding of drawing in 3D and how to produce working drawings. Students will manufacture a steady hand game and learn to use wire strippers; cutters; pliers; and screwdrivers. They will gain an understanding of the components required to complete a simple circuit and make a buzzer work. Workshop equipment will be used accurately to aid in the production of the artefact. Some students may use CAM to cut out their backboard designs for the game. They will evaluate the success of their product and suggest modifications for improvement and this may include further design sketches.										
		Computing Components		**Networking and the Internet**		**Binary and Computer Logic**		**Programming in Python: Selection**		**Advanced Spreadsheets**			

	Information Technology	This module explores what is inside a computer as well as how a computer's performance can be measured. It also looks at computer peripherals and types of storage and culminates in an examination of the latest technology available with the Internet of Things. Knowing about the core components that make up digital devices is essential if you want to understand what you are using, if you want to make good decisions when you choose new tech and if you want to fix problems.	Computer networks are a fundamental part of modern computer systems, and standalone systems are, now, almost unheard of. In this module, students will learn about some of the everyday practicalities of networking, such as understanding the pros and cons of using public Wi-Fi and mobile data when away from home, as well as more fundamental concepts such as IP addressing, DNS and packet switching. The module will help students understand the digital world around them and prepare them to study computer science at a higher level if they choose to.	The world today is one in which digital devices are both ubiquitous and indispensable. The word 'digital' is used to describe electronic technology that generates, stores and processes data in one of two states, high or low voltage. This module will provide the students with an insight into how a digital processor works, as well as teaching them how data can be represented as a series of bits. Students tend to find this topic fascinating, as something that initially appears impossible or magical is understood to be so beautiful in its simplicity.	An important feature of a computer program is the ability to make decisions and respond to them. This module covers the second key programming construct, selection, and the use of the if statements. Throughout this module, students will use Code-IT for Progress in Computing, a responsive online environment, to write and test their own code to solve coding challenges and develop their programming skills.	Spreadsheets are incredibly useful and powerful tools. They are used every day by people in all sorts of ways, from storing information about products and stock levels to managing multi-million-pound budgets. This module focuses on more advanced features of spreadsheets, including new functions, form controls and macros to develop more bespoke and user-friendly spreadsheets.

Year 9		Autumn 1		Autumn 2		Spring 1		Spring 2		Summer 1		Summer 2	
		BREATHING AND RESPIRATION BQ01 Biology: What are living things and what are they made of?	**MAGNETS AND ELECTROMAGNETS BQ13 Physics: How do electricity and magnetism work?**	**MATERIALS BQ06 Chemistry: How do we explain how substances behave?**	**HIDDEN FORCES BQ11 Physics: How do forces make things happen?**	**PLANT NUTRITION AND PHOTOSYNTHESIS BQ01 Biology: What are living things and what are they made of?**	**CARBON CYCLE AND CLIMATE CHANGE BQ09 Chemistry: How can we explain changes in the air, land and oceans?**	**WAVES BQ12 Physics: How do we see, hear and communicate BQ04 Biology: Why are there similarities and differences between living things?**	**ADAPTATIONS, COMPEITION, NATURAL SELECTION AND EVOLUTION BQ04 Biology: Why are there similarities and differences between living things?**	**PATTERNS IN THE PERIODIC TABLE BQ06 Chemistry: How do we explain how substances behave? BQ07 Chemistry: What are things made of?**	**DISEASE AND DRUGS BQ05 Biology: How do living things stay healthy?**	**RESISTANCE AND PARALLEL CIRCUITS BQ13 Physics: How do electricity and magnetism work?**	**REPRODUCTION IN PLANTS BQ02 Biology: How do living things grow and reproduce?**
Science and Technology	**Science**	In this module, students will learn what breathing is and how our body moves air into and out of our lungs. Students will describe what gas exchange is and how the respiratory system is adapted to maximise gas exchange. Students will learn what respiration is and why it is important. The differences between aerobic and anaerobic respiration and fermentation	In this module, students will investigate magnets and magnetic field, including plotting the magnetic field of a bar magnet. Students will study the effects of the Earth's magnetic field. Students will describe what electromagnets are, how to build them and factors affecting the strength of electromagnets	In this module, students will learn that different materials have different properties, and each material is carefully chosen to match the needs of the job it is performing.	Students will learn how to describe gravity and weight as forces and describe the factors that affect it. Students will also learn how to calculate mass, weight and gravitational field strength using the equation W=mg	In this module, students will learn what photosynthesis is and why it is important. Where photosynthesis happens, how the reactants get to the leaf, and how the products are removed from the leaf. Students will describe the structure of a leaf and how this helps it to do photosynthesis	In this module, students will learn the composition of the current atmosphere, the early atmosphere, and what caused the changes. Students will describe how carbon is recycled through the atmosphere.	In this module, students will what transverse and longitudinal waves are and the differences between them. Students will be able to calculate the speed of a wave.	In this module, students will explain how variation and competition lead to the natural selection of individuals with the most helpful characteristics. Students will explain the theory of evolution by natural selection.	In In this module, students will identify and describe properties of some different groups of elements in the periodic table, including the pattern in reactivity of Group 1 metals with water and Group 2 metals with dilute acid, and compare the two groups' reactivity.	In this module, students will explain the differences between infectious and non-infectious disease. Students will learn about the gas exchange system in healthy humans and investigate lifestyle diseases such as Asthma and those caused by smoking and vaping.	In this module, students will describe what current and potential difference are and how they change in parallel circuits. They will also investigate what resistance is, how to calculate it from current and potential difference	In this module. Students will learn the key parts of a flower and how these take part in reproduction. How pollination occurs and what things can affect it and the stages of fertilisation of a flower.

Design Technology					
Information Technology	**The Ethics of Computing**	**Programming in Python: Iteration**	**Designing Websites**	**Sound and Video Project**	**Further 3D Printing**
	This module will give students the opportunity to investigate some of the wider ethical issues surrounding modern information technologies, including the moral, environmental and legal issues that can arise in the digital age. Most lessons encourage students to form opinions and develop arguments. Students will end the module with an in-depth case study looking at the moral dilemmas associated with driverless cars.	Computers are excellent at repeating the same process over and over again. This module covers the third key programming construct, iteration, and the use of for and while loops. Throughout this module, students will use Code-IT for Progress in Computing, a responsive online environment, to write and test their own code to solve coding challenges and develop their programming skills.	Websites are an integral part of modern life and the most important part of the internet. Almost all businesses have a website, which is used to inform potential customers about their products and services and enable them to purchase goods online. Websites are also used for online banking and to provide access to entertainment and gaming. While it is possible to use drag-and-drop-style software and templates to create a website, it is far more powerful to create your own by writing the source code yourself. This module looks at how HTML and CSS interact to define and display a website, together with the principles of good website design.	This project requires students to use the image creation and audio- and video-editing skills they have learnt to create a 30-second multi-media advert to promote a theme park. Students will collate a range of sound and video files that they source their own. Students should use an iterative approach, developing different aspects of the advert independently and then combining them to produce their final product.	This module is intended for students to follow on from 'An introduction to 3D printing'. Students will review the impact that 3D printers can have on people's lives and society and explain how 3D printing is changing how products are made. They will gain an understanding on how 3D Printers are being used in the medical industry. Practically they will model basic CAD features, such as extrude, revolve, shell and fillet then design and export a file for ready 3D Printing.