Science – Year 8 Overview

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6	Careers
Year 8	**Forces**	**Bonding & Molecules**	**Earth & Environment**	**Systems (1)**	**Energy**	**Forces**	
	Forces are categorised into contact and non-contact forces. Forces can be represented by arrows and free body diagrams. Gravity acts on all objects and pulls towards the centre of the Earth.	Some compounds involve non-metals chemically bonding together and some compounds involve a metal and a non-metal bonding together. Metals take part in important reactions with acids and with oxygen.	When animals and plants die, they form fossil fuels over millions of years. Fossil fuels, along with other useful resources can be extracted from the Earth for use by an increasingly large human population. Combustion of fossil fuels causes Global Warming.	A fertilised egg produces identical copies of itself to form a Zygote. The placenta exchanges substances between the mother & fetus. During labour, the uterus contracts & the cervix dilates.	Energy resources can be renewable or non-renewable. Energy can be transferred through conduction, convection & radiation. Power = energy transferred / time.	Forces are pushes or pulls. Forces can deform objects through stretching or squashing. There is a linear relationship between force and extension; Hooke's Law is a special case. Work done = force x distance. Power is a measure of the energy transferred over time – it is also a measure of the work done over time.	**Term 1: A career as a Nuclear medicine doctor.** When studying atomic physics and different types of radiation, students will look at how nuclear medicine doctors use radioactive substances to examine the physiological processes in disease. **Term 4: A career as a nutritionist.** When studying Systems 2 and our Digestive system and lifestyle factors that can affect our health, students will look at how nutritionists use their knowledge of the science of food to help individuals and groups make the right choices about what they eat. **Term 5: A career as a pharmacist.** When studying drugs and how they can affect our health, students will look at how a pharmacist can support people with their health and give advice
	Atomic Physics	**Reactions & Energy**	**Cells**	**Systems (2)**	**Electricity & Magnetism**		
	The model of the atom we have today is based on the work of John Dalton but other Scientists have contributed to our knowledge of the atom. Some atoms are stable, some are unstable. The unstable ones give out radiation which can be dangerous.	A metal + acid → salt + hydrogen. A metal + oxygen→ Metal Oxide. Acids and Alkalis have a pH value between 1 – 14 Acids & Alkalis neutralise each other in a reaction. Complete combustion releases Carbon Dioxide and Water. Some reactions take in energy (endothermic). Some reactions give out energy (exothermic).	Respiration takes place in all cells. Cells can be prokaryotic or eukaryotic. Specialised Cells have *adaptations* for their functions. Examples are: Muscle Cells, Nerve Cells, Xylem and Phloem Cells, Root Hair Cells. Stem cells are non-specialised. Diffusion allows substances to move in & out of cells.	The Alveoli have adaptations to facilitate gas exchange. Asthma is a respiratory condition. Lifestyle factors can affect our health. The Digestive System contains enzymes to break down food. Enzymes can be affected by temperature changes.	Resistance. Resistance rules in series and parallel circuit. Current through a wire creates a magnetic field. A current through a wire + a magnetic core = an electromagnet.		

	Atoms & Elements	**Natural World**	Microscopes can be used to view cells.	**Drugs**			about the medicines that they need to take.
	In atoms, protons are positive, electrons are negative & neutrons are neutral. The Periodic Table contains all known elements and was developed by Dimitri Mendeleev. The Periodic Table contains elements that are metals and non-metals.	Plants compete for light, space, water & mineral ions. Animals compete for food, territory & mates. Plants & animals have adaptations which help them to compete.		Other lifestyle factors (drugs) can also affect other aspects of our health. Alcohol is a depressant that can affect the health of the Liver; recreational drugs can also have many psychological and physiological effects. Medicines also affect the body but are tested to ensure they are safe.			