

## Long Term Plan KS4: Entry Level Science



### Year 10 Entry Level

	Autumn	Spring	Summer
<b>ELC Component</b>	Component 1 Biology – The Human Body	Component 3 Chemistry – Elements, mixtures and compounds	Component 5 Physics – Energy, Forces and the structure of matter
<b>Skills, Knowledge and Learning</b>	<p>The human body is composed of structures called organs, which are organised into organ systems that carry out all of the key processes of life. These systems all require energy, which is contained in food and released in the cell by respiration. The organ systems are responsible for delivering food and oxygen to the cells and taking away waste.</p> <p>All these key processes, including reproduction, are coordinated by the nervous system and a hormone system.</p> <p>A healthy body can be maintained by a balanced diet, exercise and a healthy lifestyle. Health can be damaged by microbes, which can cause infectious diseases. The body can defend itself against most diseases but will sometimes need drugs in order to alleviate the symptoms and speed recovery.</p>	<p>Matter is composed of tiny particles called atoms and there are about 100 naturally occurring types of atoms called elements.</p> <p>Elements are shown in the periodic table and are either metals or non-metals. Atoms are the building blocks for all substances. When two or more elements combine chemically a compound is produced.</p> <p>Different substances have different combinations of atoms joined together in different ways, which gives them different properties, such as whether they are solid, liquid or gaseous at room temperature. Many materials we use are mixtures. Mixtures can be separated by processes such as filtration. Polymers have many useful applications.</p>	<p>Forces are pushes or pulls, and if a force causes an object to move then work is done and energy is transferred. Energy can be transferred usefully, stored or dissipated, but cannot be created or destroyed. A braking force will cause an energy transfer that makes a vehicle slow down and heats the brakes. The braking distance of a vehicle depends on many different things, such as the speed of the vehicle.</p> <p>The energy resources available to use may be divided into renewable and non-renewable. Energy can also be released from atoms, which contain smaller particles such as neutrons and protons in the nucleus, because atoms can break down to emit particles or gamma rays.</p>
<b>Enrichment/ Experiences</b>	Microscopy practical, respiration practical.	Making slime, filtration practical	Visit to a wind farm or hydroelectric - Green Park Wind Turbine  Mercedes Benz world  Go-karting
<b>Curriculum End Point / Goal</b>	Low stakes quizzes, Externally assessed assessment, Teacher devised assessment.	Low stakes quizzes, Externally assessed assessment, Teacher devised assessment.	Low stakes quizzes, Externally assessed assessment, Teacher devised assessment.

## Long Term Plan KS4: Entry Level Science

### Year 11 Entry Level

	Autumn	Spring	Summer
<b>ELC Component</b>	Component 6 Physics – Electricity, magnetism and waves.	Component 4 Chemistry – Chemistry in our world.	Component 2 Biology – Environment, evolution and Inheritance.
<b>Skills, Knowledge and Learning</b>	<p>Electricity is used in domestic and industrial situations to supply energy. Electric current is a flow of electrical charge and measured in amps. Direct current (d.c.) is supplied by cells and alternating current (a.c.) is supplied by the mains, but in both cases the size of the current depends on the resistance in the circuit. When current flows through a coil of wire an electromagnet is formed, which like permanent magnets, can exert a force over a distance.</p> <p>Electric currents can also be used to produce electromagnetic waves, which have many uses including the transmission of information and the transfer of energy from one place to another.</p>	<p>Acids react with metals, alkalis and bases to produce compounds known as salts. Many chemical reactions produce a change in temperature. Chemical reactions can be made to go faster or slower by changing the conditions. The Earth's atmosphere has changed over billions of years. Human activities increase the amounts of some substances in the atmosphere. Water that is safe to drink is essential for human health.</p>	<p>Life on Earth is dependent on photosynthesis to fix carbon dioxide and produce the organic molecules used as the fuels for respiration and life processes. Living organisms interact with one another and their environment in many different ways. Human behaviours may have beneficial or detrimental effects on natural populations and the environment. The chemicals in the environment are continually cycling through the natural world.</p> <p>Life on Earth has evolved over time by natural selection, which accounts for biodiversity and how organisms are related. The characteristics of living things depend on both their environment and their genome.</p> <p>Humans can now use genetic engineering to modify organisms.</p>
<b>Enrichment/ Experiences</b>	Building a circuit, testing voltage and current in a circuit. Making a simple game involving a circuit.	Making a hand warmer, Red cabbage indicator.	<p>Observing photosynthesis, changing the rate of photosynthesis. Climate change and how humans have changed the world.</p> <p>Museum visit.</p>
<b>Curriculum End Point / Goal</b>	Students will have completed an externally set assessment and a teacher devised assessment for each of the units, contributing to the final grade for the course.		