

	Working Towards	Expected Standard	Greater Depth
	By the end of Year 8 a student should be able to:	By the end of Year 8 a student should be able to:	By the end of Year 8 a student should be able to:
A U T U M N	<p><b>B1 Microbes and Disease</b></p> <ul style="list-style-type: none"> <li>The similarities and differences between 3 types of microbes (bacteria, virus, fungi)</li> <li>The definitions and differences between microbes and disease.</li> <li>To describe how microbes can enter the body and explain how the body can stop this</li> <li>Define respiration and observe respiration in a series of practical tasks</li> <li></li> </ul> <p><b>C1</b> Needs completing Project– Earth and Materials Science</p>	<p><b>B1 Microbes and Disease</b></p> <ul style="list-style-type: none"> <li>A word summary for aerobic respiration</li> <li>The process of anaerobic respiration in humans and micororganisms, including fermentation and a word summary for anaerobic respiration</li> <li>The difference between aerobic and anaerobic respiration in terms of the reactants, the products formed and the implications for the organisms.</li> </ul> <p><b>C1</b> Needs completing Project– Earth and Materials Science</p>	<p><b>B1 Microbes and Disease</b></p> <ul style="list-style-type: none"> <li>Define decomposition/decay, explain the conditions needed for decomposition to occurs and how to reduce this. Explain how carbon can be recycled</li> <li>Define 'antibiotics', explain their use and how antibiotic resistance occurs</li> <li>Explain how disease are spread and how to reduce the spread.</li> <li>Understand the conditions required for bacterial growth and why incubation is an important factor</li> <li>Describe the immune response (white blood cells).</li> </ul> <p><b>C1</b> Needs completing Project– Earth and Materials Science</p>

**B2 Organ Systems**

- The structure and function of the skeleton – support, protection, movement and making blood cells
- The structure of the lungs
- What are the components of blood? How are blood vessels adapted to their function?
- The structure of the heart and the flow of blood around the body
- The role of each organ in the digestive system
- The contents of a healthy human diet and why each part is needed. Calculations of energy requirements in a healthy daily diet.

**B2 Organ Systems**

- The function of muscles and examples of antagonistic muscles
- Biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles.
- The structure and functions of the gas exchange system in humans including adaptations to function
- The mechanism of breathing to move air in and out of the lungs
- The effects of recreational drugs (including substance misuse) on behaviour, health and life processes.
- The tissues and organs of the digestive system inc. adaptations to function and how the digestive system digests food (Enzymes)

**B2 Organ Systems**

- What are the roles of ligaments and tendons.
- Be able to use a pressure model to explain the movement of gases, including simple measurements of lung volume
- Causes and treatment of CVD
- The impact of exercise, asthma and smoking on the human gas exchange system.
- How to test for Glucose and Protein
- The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases.
- The importance of bacteria in the human digestive system.

### **P1 Energy Changes and Transfers**

- Comparing energy values of different foods,
- Comparing power appliances in the home.
- Law of Conservation of Energy e.g. energy as a quantity that can be quantified and calculated
- Processes of how fossil fuels are formed.
- The definition of the term “efficiency” and how to calculate it

**National STEM week**

### **P1 Energy Changes and Transfers**

- Calculations for work done, power and cost.
- Advantages and disadvantages of fossil fuels.
- Domestic fuel bills, fuel use and costs; fuels and energy resources.
- comparing amounts of energy transferred
- heating and thermal equilibrium – conduction, convection and radiation

**National STEM week**

### **P1 Energy Changes and Transfers**

- Investigations using insulators to test for energy transfers in systems.
- Naming renewable energy types, the differences between renewable and non-renewable energy resources
- Calculations for work done, power and cost.

**National STEM week**

**C2 Chemical Reactions**

- Recall the differences between physical change and chemical reactions
- Describe the difference between complete and incomplete combustion
- Understand what the reactivity series is
- Understand how can you use the reactivity series to make predictions
- Understand why certain metals are found in pure form or in metal ores

**P2 Space Physics and Waves**

- The order of the planets in our solar system
- Why we have night and day.
- The seasons and the Earth's tilt, day length at different times of year, in different hemispheres
- Our Sun as a star, other stars in our galaxy, other galaxies.
- The similarities and differences between light waves and waves in matter.

**C2 Chemical Reactions**

- Describe and explain different types of reactions
- Be able to write word/formulae equations
- Identify fast/slow reactions & Endothermic/Exothermic reactions
- Explain how the reactivity series was generated.
- Predict when a displacement reaction will take place

**P2 Space Physics and Waves**

- Gravity force, weight equation and calculations for other planets, and stars.
- The similarities and differences between light waves and waves in matter.
- The basic features of waves (amplitude, wavelength, and frequency). Longitudinal Vs Transverse.
- Investigations and ray modelling with reflection in mirrors, refraction of light and action of convex lenses.

**C2 Chemical reactions**

- Be able to balance chemical equations.
- Explain real world examples of displacement reactions
- Define the terms oxidation and reduction.
- Identify oxidation and reduction in chemical reactions
- ~What catalysts do.

**P2 Space Physics and Waves**

- Reasons as to why the Heliocentric model of the solar system was favoured over the Geocentric model.
- The light year as a unit of astronomical distance.
- How to calculate wave speed using the wave speed equation.
- The main features of the human eye
- how long and short sightedness can be corrected.
- Colours and different frequencies of light, white light and prisms.