

# EMMANUEL COLLEGE

## THE SCIENCE DEPARTMENT

Year 7



Year 7	Autumn Term	Spring Term
<b>Unit Title</b>	Organisms 1	Organisms 2
<b>Key Question(s)?</b>	What are cells and how do humans reproduce?	How does the body function?
<b>Threshold Concepts</b>	<p>Multicellular organisms are composed of cells which are organised into tissues, organs and systems to carry out life processes.</p> <p>There are many types of cell. Each has a different structure or feature so it can do a specific job.</p> <p>The menstrual cycle prepares the female for pregnancy and stops if the egg is fertilised by a sperm.</p> <p>The developing foetus relies on the mother to provide it with oxygen and nutrients; to remove waste and protect it against harmful substances.</p>	<p>The body needs a balanced diet with lipids, proteins, vitamins, minerals, dietary fibre and water, for its cells' energy, growth and maintenance.</p> <p>Organs of the digestive system are adapted to break large food molecules into small ones which can travel in the blood to cells and are used for life processes.</p> <p>In gas exchange, oxygen and carbon dioxide move between alveoli and the blood. Oxygen is transported to cells for aerobic respiration and carbon dioxide, a waste product of respiration, is removed from the body. Breathing occurs through the action of muscles in the ribcage and diaphragm. The amount of oxygen required by body cells determines the rate of breathing.</p>
<b>Link to Prior Learning</b>		This unit uses the ideas of how multicellular organisms are structured which was covered in the first unit, looking at specific systems such as the digestion and respiratory systems.
<b>Knowledge and Sequencing Rationale</b>	<p>We begin with core concepts in the three subject areas of science. We look at the nature of matter in chemistry, multicellular organisms in biology and electricity and energy transfer in physics. These are essential concepts that build on ideas from primary school science. We alternate between the three subject areas of science to demonstrate to students the broad areas of study required in secondary science. We spend six weeks on each topic area so as not to hit cognitive overload with younger students. At the end of each six-week topic, a week of study is dedicated to revision, recap and formative feedback.</p> <p>The next sequence of topics (2B, 2C and 2P) build on the concepts introduced in the first sequence. 2C continues to delve deeper into the nature of matter and introduces patterns based on atomic structure, 2B takes the ideas of how multicellular organisms are structured by looking at specific systems such as the digestion and respiratory systems. 2P introduces the concepts of forces, giving lots of contextual examples of how forces can change the 'form' on an object. Energy features in each of the four physics topics at KS3 and ideas about energy are developed in each of them. Biological processes feature in each of the four biology topics at KS3 and ideas about these processes are developed in each of them. The nature of matter features in each of the four chemistry topics at KS3 and ideas about how matter changes are developed in each of them.</p>	

