

## What are the aims and intentions of this curriculum?

The aim of our Key Stage 4 Curriculum is to provide the foundations for understanding the material world. Scientific understanding is changing our lives and is vital to the world's future prosperity, and all students should be taught essential aspects of the knowledge, methods, processes and uses of science. They should be helped to appreciate how the complex and diverse phenomena of the natural world can be described in terms of a small number of key ideas relating to the sciences which are both inter-linked, and are of universal application.

Term	Topics	Knowledge and key terms	Skills developed	Assessment
Autumn 1	<b>Biology</b> <ul style="list-style-type: none"> <li>Cell division</li> <li>Organisation and the digestive system</li> </ul>	Students will learn: <ul style="list-style-type: none"> <li>About cell division, growth and differentiation stem cells, stem cells dilemmas, tissues and organs, the digestive system and how it works, food chemistry, catalysts and enzymes, factor affecting enzyme action, making digestion efficient.</li> </ul>	Students will be able to: <ul style="list-style-type: none"> <li>verbally communicate well constructed arguments for or against stem cells.</li> <li>carry out a food test and record results in a table.</li> <li>Plan an experiment to investigate how different catalysts affect the rate of a reaction.</li> </ul>	<ul style="list-style-type: none"> <li>Kerboodle end of chapter assessments (Foundation)</li> <li>Required Practical to be written up after each investigation.</li> </ul>
Autumn 2	<b>Chemistry</b> <ul style="list-style-type: none"> <li>Atomic structure</li> <li>The periodic table</li> </ul>	Students will learn: <ul style="list-style-type: none"> <li>About structure of the atoms, chemical equations, separating mixtures, electronic structures.</li> <li>Development of the periodic table.</li> </ul>	Students will be able to: <ul style="list-style-type: none"> <li>Use experimental data to explain the classification of a substance as a compound or a mixture</li> <li>Write word and symbol equations from descriptions of how Group 1 metals react with water.</li> <li>Use data to determine the state of a substance at a given temperature.</li> </ul>	<ul style="list-style-type: none"> <li>Kerboodle end of chapter assessments (Foundation)</li> <li>Required Practical to be written up after each investigation.</li> </ul>

<b>Spring 1</b>	<b>Biology</b> <ul style="list-style-type: none"> <li>Organizing animals and plants</li> <li>Communicable diseases</li> </ul>	Student will learn: <ul style="list-style-type: none"> <li>About blood, the heart, breathing and gas exchange, transport system in plants, factors affecting transpiration.</li> <li>Health and disease, pathogens, viral and bacterial diseases, human defence responses.</li> </ul>	Students will be able to: <ul style="list-style-type: none"> <li>view blood under a light microscope and recognise components</li> <li>use a microscope to identify the different tissues in a cross-section of a leaf.</li> <li>communicate to the public about how to stop the spread of a disease</li> <li>use a model to explain how the body defends itself against disease</li> </ul>	<ul style="list-style-type: none"> <li>Kerboodle end of chapter assessments (Foundation)</li> <li>Required Practical to be written up after each investigation.</li> </ul>
<b>Spring 2</b>	<b>Chemistry</b> <ul style="list-style-type: none"> <li>Structure and bonding</li> <li>Chemical calculations</li> </ul>	Students will learn: <ul style="list-style-type: none"> <li>About the states of matter</li> <li>Ionic and covalent bonding, giant structures, Fullerenes and graphene, bonding in metals, giant metallic structures.</li> <li>Relative masses, expressing concentration.</li> </ul>	Students will be able to: <ul style="list-style-type: none"> <li>Draw dot and cross diagrams of compounds formed between Group 1 and Group 7 elements.</li> <li>Generate formula of a wide range of ionic compounds when the charges of the ions are given</li> <li>Draw dot and cross diagrams and ball and stick diagrams for H<sub>2</sub>, Cl<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, HCl, H<sub>2</sub>O, NH<sub>3</sub>, and CH<sub>4</sub>.</li> </ul>	<ul style="list-style-type: none"> <li>Kerboodle end of chapter assessments (Foundation)</li> <li>Required Practical to be written up after each investigation.</li> </ul>
<b>Summer 1</b>	<b>Biology</b> <ul style="list-style-type: none"> <li>Preventing and treating disease</li> <li>Non-communicable disease</li> </ul>	Students will learn about: <ul style="list-style-type: none"> <li>Discovering and developing drugs, preventing infections, Vaccination, Antibiotics and painkillers, discovering new drugs.</li> <li>Non-communicable diseases, cancer, smoking and the risk of disease, diet, exercise, and disease, alcohol and other carcinogens.</li> </ul>	Students are able to: <ul style="list-style-type: none"> <li>Decide when a painkiller or antibiotic should be used to treat an illness.</li> <li>Analyse data to draw conclusions on the effectiveness of new antibiotics.</li> <li>Classify diseases as communicable and non-communicable</li> </ul>	<ul style="list-style-type: none"> <li>Kerboodle end of chapter assessments (Foundation)</li> <li>Required Practical to be written up after each investigation.</li> </ul>
<b>Summer 2</b>	<b>Chemistry</b> <ul style="list-style-type: none"> <li>Chemical changes</li> </ul>	Students will learn about: <ul style="list-style-type: none"> <li>The reactivity series, displacement reactions, extracting</li> </ul>	Students are able to: <ul style="list-style-type: none"> <li>Making salts from metal oxide and acid</li> </ul>	<ul style="list-style-type: none"> <li>Kerboodle end of chapter</li> </ul>

- Electrolysis

metals, making salts, changes at the electrodes, extraction of aluminium, electrolysis of aqueous solutions.

- Write a balanced symbol equation including state symbols for the overall electrolysis of a molten ionic compound
- Describe electrolysis of solutions in terms of movement of ions
- Safely electrolyse a solution, with guidance provided, plan and carry out an electrolysis investigation.

assessments (Foundation)

- Required Practical to be written up after each investigation.