




Why we teach Science at St Paul's Academy

Science should be about the how and why things happen. At St Paul's we want our students to have a deep understanding of the world in which they live. We want them to be critical thinkers that can look for truth and understand the important role that evidence has in establishing truth. Finally, we want our students to be socially conscious of their impact on each other, the local community and the environment in which they live.




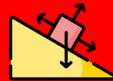

School values/Careers Links

Science can open doors to all sorts of careers; this course can be used as a stepping stone to a Level 3 course such as A Level Biology, Chemistry or Physics or BTEC Applied Science. It brings a lot of scientific theory and thinking together and a good GCSE grade in Combined Science demonstrates that a student can apply themselves in problem solving, practical skills and scientific writing; these qualities are highly prized by universities and in today's competitive job market.

Disciplinary Knowledge/Big Ideas

<p>Answering Scientific Questions</p> 	<ul style="list-style-type: none"> • Be able to understand key command words used in science and use them in the correct context. • Be able to link scientific theory with the context set out in a question. • Be able to plan a valid investigation that reduces sources of error and planned to obtain precise, accurate and reproducible results. • Be able to correctly identify independent, dependent variables in investigations. • Be able to use control variables to ensure any investigation is fair and would lead to valid results
<p>Obtaining and Presenting Evidence</p> 	<ul style="list-style-type: none"> • Be able to plan and carry out scientific investigations safely. • Be able to use scientific skills to obtain valid results. • Be able to organise results in tables and understand the headings and what they mean. • Be able to show patterns and trends within results obtained in the form of graphs. • Be able to construct lines of best fit to show any patterns of trends in results. • Be able to calculate averages and ranges to analyse the precision and accuracy of data • Be able to identify anomalies in data and suggest the reason for them. • Use formula data in processing results
<p>Considering and Evaluating Evidence</p> 	<ul style="list-style-type: none"> • Be able to analysis graphs and data to come to valid conclusions. • Be able to evaluate data to suggest improvements to scientific methods. • Be able to evaluate evidence and come to justifiable conclusions. • Be able to link conclusions to hypotheses and be able to state whether it has been proven. • Be able to obtain secondary data to support valid conclusions. • Be able to link conclusions to real world context and assess the impact of findings on future investigations.

Substantive Knowledge/Big Ideas

<p>Energy</p> 	<ul style="list-style-type: none"> • Be able to identify energy stores and describe how they can transfer from one to another. • Be able to explain the concept of conservation of energy in a variety of contexts. • Be able to use understanding of energy stores in real world contexts • Be able to show understanding of uses of waves in real world settings.
<p>Cells</p> 	<ul style="list-style-type: none"> • Be able to differentiate between different types of cell and the mechanics of observing them. • Be able to explain how body systems interact and function. • Be able to assess key ideas surrounding the evolution of life. • Be able to describe and explain disease and the prevention of disease.
<p>Atoms</p> 	<ul style="list-style-type: none"> • Be able to define and describe atoms, elements, compounds and mixtures accurately. • Be able to use The Periodic Table to explain properties of matter. • Be able to analysis chemical tests and determine meaning from results. • Be able to show bonding of elements and industrial processes that use this knowledge.
<p>Forces</p> 	<ul style="list-style-type: none"> • Be able to identify forces and how they interact with objects. • Be able to contextualise Newtonian Physics in everyday life. • Be able to explain the uses of forces in real world contexts.
<p>Environment</p> 	<ul style="list-style-type: none"> • Be able to identify renewable and non-renewable energy resources. • Be able to link sustainability and ecosystems with industry. • Be able to explain the changing planet and the history of the Earth's environment..

