

Applied Science Intent

'Teaching of science should never be about the science only the people in the room' Bryan Brown
"The whole of science is nothing more than a refinement of everyday thinking" - Albert Einstein

In Applied Science, at both KS4 and KS5 we provide an inclusive curriculum that develops an understanding in all three sciences, Biology, Chemistry and Physics and develop skills such as collecting data, how to evaluate data, how to draw conclusions and communication skills. All skills that will help our students not just in higher education and employment but throughout life. Applied Science provides for students who benefit from a vocational course with the opportunities to link education and the world of work in engaging, relevant and practical ways and supports students' development of transferable interpersonal skills.

Confident Learners	Confident Communicators	Confident Future Citizens
<p>To create confident learners, the Applied Science curriculum is:</p> <ul style="list-style-type: none"> Structured to support and challenge learners Supportive in the development of transferable interpersonal skills Aims to link a practical and applied approach to learning in a real-life scientific context Considerate to the diverse needs of learners 	<p>To create confident communicators, the Applied Science curriculum:</p> <ul style="list-style-type: none"> Develops literacy to enable learners to communicate their scientific knowledge and ideas Develops their presentation skills by building confidence with pronunciation of keywords, positive body language and rehearsing their presentations Encourages learners to discuss their scientific ideas Encourages learners to use language that is clear, specific and precise 	<p>To create confident future citizens, the Applied Science curriculum:</p> <ul style="list-style-type: none"> Creates a safe space to learn about diverse situations, to voice opinions and build respect Increases awareness of a healthy diet, human activity and risks to health which informs them in their future life Develops an understanding of how their actions and decisions are affected by and affect others, recognising how important it is to behave in ways that can have a positive effect on others and the environment
<p>The Applied Science curriculum provides opportunities for all to:</p> <ul style="list-style-type: none"> Undertake practical work to develop essential scientific skills Practice math skills and develop literacy skills To explore scientific ideas and development Research and present scientific ideas 	<p>The Applied Science curriculum provides opportunities for all to:</p> <ul style="list-style-type: none"> Develop their ability to complete assignment tasks and access exam questions through modelling and scaffolding Engage in class and group discussions and teamwork Orally present ideas and classwork 	<p>The Applied Science curriculum provides opportunities for all to:</p> <ul style="list-style-type: none"> Progress into further study and responsibility within the workplace Take responsibility for their own learning and to develop skills that are essential for the modern-day workplace Develop knowledge and understanding by applying their learning and skills in a work-related context

The Key Concepts running through Applied Science

KS4

- Principles of science** - Cells, organs and genes, roles of the nervous and endocrine systems in homeostasis and communication, atomic structure and the periodic table, substances and chemical reactions, importance of energy stores, energy transfers, energy transformations and the properties and applications of waves in the electromagnetic spectrum.
- Chemistry and our Earth** - Investigate chemical reactivity and bonding, investigate how the uses of chemical substances depend on their chemical and physical properties, Investigate the factors involved in the rate of chemical reaction and understand the factors that are affecting the Earth and its environment

- **Energy and our Universe** - Understand ionising radiation, its uses and sources and know how electrical energy produced from different sources can be transferred through the National Grid to homes and industry and know the components of the Solar System, the way the Universe is changing and the methods we use to explore space
- **Biology and our environment** - Investigate the relationships that different organisms have with each other and with their environment, demonstrate an understanding of the effects of human activity on the environment and how these effects can be measured and the factors that affect human health

KS5

- Periodicity and properties of elements - Structure and bonding in applications in science, production and uses of substances in relation to properties
- Structure and functions of cells and tissues - Cell structure and function, cell specialisation and tissue structure and function
- Waves in communication – Working with waves, waves in communication and the use of electromagnetic waves in communication
- Skills developed include: team working; working from a prescribed brief; working to deadlines; presenting information effectively; and accurately completing administrative tasks and processes
- Undertake titration and colorimetry to determine the concentration of solutions - Laboratory equipment and its calibration, preparation and standardisation of solutions using titration and colorimetry
- Undertake calorimetry to study cooling curves - Thermometers and cooling curves
- Undertake chromatographic techniques to identify components in mixtures - Chromatographic techniques, application of chromatography and interpretation of a chromatogram
- Review personal development of scientific skills for laboratory work - Personal responsibility, interpersonal skills and professional practice
- Planning a scientific investigation: Developing a hypothesis for an investigation, selection of appropriate equipment, techniques and standard procedures, health and safety associated with the investigation, variables in the investigation, method for data collection and analysis, data collection, processing and analysis/interpretation, collection of quantitative/qualitative data, processing data, drawing conclusions, interpretation/analysis of data and evaluation
- Enzymes in action, protein structure, enzymes as biological catalysts in chemical reactions, factors that can affect enzyme activity, diffusion of molecules, factors affecting the rate of diffusion, arrangement and movement of molecules, plants and their environment, factors that can affect plant growth and/or distribution, sampling techniques, sampling sizes, energy content of fuels, fuels, hazards associated with fuels, units of energy, electrical circuits. use of electrical symbols to design circuits, power and work equations and energy usage
- Understand the impact of disorders of the musculoskeletal system and their associated corrective treatments -Structure of the musculoskeletal system, Function of the musculoskeletal system and health matters and treatments related to the musculoskeletal system
- Understand the impact of disorders on the physiology of the lymphatic system and the associated corrective treatments - Structure of the lymphatic system, function of the lymphatic system and health matters and treatments related to the lymphatic system
- Explore the physiology of the digestive system and the use of corrective treatments for dietary-related diseases - Structure of the digestive system, Function of the digestive system and health matters and treatments related to the digestive system