

Applied Science BTEC at Samuel Whitbread Academy

Intent

At Samuel Whitbread Academy, we aim to bring Science into an applied setting, building upon knowledge but linking this to real world application. We aim to inspire and aspire, and demonstrate that learning is continuous, just as developments are in the world of Science.

Our KS5 curriculum has a high expectation of pupils and aims to develop compassion, integrity and admiration for both the natural world around them and the work that happens in a lab. We intend for our students to recognise our shared values with others' around the world and to be confident to have their own opinion, whilst understanding others, being able to debate with scientific evidence. Students develop an understanding of lab work they can undertake now and improve on, alongside inspiring them to pursue Science in the future to refine their skills.

Applied Science at BTEC Level 3 is an enriching experience and provides students a broad-range of skills and knowledge. At Samuel Whitbread Academy, we instil core scientific skills, both practical and theoretical. We aim to create a generation of scientists who will be the future of medical development, improving healthcare globally and continue with the technological advances we have seen in recent years. We aim to develop learners who build confidence in both theory and practical elements of Science, appreciate the world around us is scientifically driven, and providing them with practical experiences so that they have the skills to pursue a career in Science.

Our curriculum aims to create cultured, creative and motivated individuals who have a passion for Science and appreciate the role it plays in every individual's life.

Implementation

Applied Science Level 3 BTEC (Extended Certificate) is split into four units of work, two of which are externally examined and two are internally assessed via coursework. The four units provide a broad overview of Biology, Chemistry and Physics both theoretically and practically, whilst also allowing students to improve on their scientific techniques throughout the two years. With a good split between theory and practical there is lots of opportunities for across curriculum links.

Each topic in unit 1 has a mini assessment, which provides helpful topic review and assessment points for students. Discussion is key to the development of verbal skills and ideas, and students receive feedback from their peers and teachers to ensure they can move to their next step of challenge.

At Samuel Whitbread Academy, we also have a key focus on developing pupil's literacy and reading skills so that they can access the best Science broadly has to offer. When undertaking internal assessment for coursework students are required to read around the topic and use scientific literature to complement their work and reference this on their work.

Implementation	Key Stage 5: Year 12	<p>In the first year of Applied Science Extended Certificate two units are studied: Unit 1 - Principles and Applications of Science I; Unit 2 - Practical Scientific Procedures and Techniques. Unit 1 is the examined unit for the year and is comprised of three, forty-minute exams (Biology, Chemistry and Physics). Unit 1 covers a wide breadth of key scientific principles and applications across all three disciplines.</p> <p>Unit 1 Biology covers Cell Structure and Function, exploring cell theory and really progressing on from what has been learnt at GCSE level. This topic allows clear progression into the second which explores specialised cells. The final topic of unit 1 Biology is Tissue Structure and Function which underpins the workings of all organisms and creates and understanding of how we develop.</p> <p>Unit 1 Chemistry covers two in depth topics which covers all the fundamentals basic knowledge needed for the course. First topic covers Periodicity and properties of elements building on previous knowledge from GCSE and furthering understanding on a molecular level. The second topic is Production and Uses of Substances in Relation to Properties, further building upon understanding and application of the periodic table. Unit 1 Physics concentrates on the fundamentals and applications of waves. Topics of Working with Waves, Waves in Communication and Use of Electromagnetic Waves in Communication. This unit of physics allows learners to develop their maths skills in Science, rearranging equations and applying them to a real-life setting.</p> <p>Unit 2 is an internally assessed piece of coursework which includes four separate assignments. Three out of the four include practical elements and the fourth is for learners to reflect, evaluate and improve their practice.</p> <p>Learning Aim A - Undertake titration and colorimetry to determine the concentration of solutions Learning Aim B - Undertake calorimetry to study cooling curves Learning Aim C - Undertake chromatographic techniques to identify components in mixtures Learning Aim D - Review personal development of scientific skills for laboratory work.</p>
	Key Stage 5: Year 13	<p>In the second year of Applied Science Extended Certificate two units are studied: Unit 3 - Science Investigation Skills; Unit 8 - Physiology of Human Body Systems. Unit 3 is the examined unit for the year and is comprised of a two-hour fifteen-minute exam. Unit 3 covers a wide range of scientific investigative skills across all three disciplines. Unit 3 teaches learners how to methodically plan a scientific investigation, how to collect, process and analyse their data with the end goal of concluding and evaluating. Learners cover investigative techniques across Biology, Chemistry and Physics, including Enzymes, Diffusion, Plants and their Environment, Energy Content of Fuels and Electrical Circuits. Unit 8 is an internally assessed piece of coursework which includes three separate assignments to show their understanding of human physiology systems across three distinct learning aims.</p> <p>Learning Aim A: Understand the impact of disorders of the musculoskeletal system and their associated corrective treatments Learning Aim B: Understand the impact of disorders on the physiology of the lymphatic system and the associated corrective treatments Learning Aim C: Explore the physiology of the digestive system and the use of corrective treatments for dietary related diseases</p>

Impact

Our Intent and Implementation aim to ensure that all Applied Science students gain knowledge and understanding of how the science works and can be applied in a setting, as well as developing the ability to describe, evaluate and reflect at KS5 level.

Students are regularly assessed to check their understanding and progress within each of the units they are taught in Key Stage 5.

Our assessments include:

- Regular end of topic Question assessments which are teacher marked.
- IPE exams throughout Year 12 and 13.
- Coursework marked and feedback given in line with BTEC regulations.