

Subject: Applied Science**Qualification: BTEC National Extended Certificate****Course overview**

Students will develop their knowledge of scientific principles through a practical approach. Students will have the opportunity to cover areas of laboratory science, forensic science, medical science, environmental science, and the biological, chemical and physical sciences, science investigative skills and the physiology of human body systems. This provides a route into a diverse range of scientific careers.

How is the course assessed?

Grades awarded are Distinction*, Distinction, Merit and Pass. Assessment comprises of two externally assessed components, a written examination and a scenario and practical investigation set and marked externally, worth 58% of the total qualification.

Internally assessed assignments incorporate a variety of written and practical techniques equate to the remaining 42% of the course.

Where can Applied Science take you?

Completion of this qualification will give between 16 and 56 UCAS points, to be used to gain entry onto a degree course or entry into the workplace. Applied Science can lead to further study and careers including health care, scientific research, pharmacy, optometry and forensic science.

Case Study

Year Group and Term	Subject Knowledge	Assessment	Curriculum/CIAG Links
Year 12 Term 1	Unit 2: Practical Scientific Procedures and Techniques	Both learning aims in this term are internally assessed coursework portfolios including:	This unit brings the opportunity to develop many practical laboratory based and

	<p>> Learners will be introduced to quantitative laboratory techniques, calibration, chromatography, calorimetry and laboratory safety, which are relevant to the chemical and life science industries.</p> <p>> Learners will undertake 2 of 4 learning aims from this unit:</p> <p>A Undertake titration and colorimetry to determine the concentration of solutions</p> <p>B Undertake calorimetry to study cooling curves</p>	<p>> For learning aim A:</p> <p>A1 Laboratory equipment and its calibration</p> <p>A2 Preparation and standardisation of solutions using titration</p> <p>A3 Colorimetry</p> <p>> For learning aim B:</p> <p>B1 Thermometers</p> <p>B2 Cooling curves</p>	<p>employability skills in three main categories:</p> <ul style="list-style-type: none"> • Cognitive and problem-solving skills: use critical thinking, approach non-routine problems applying expert and creative solutions, use systems and technology
<p>Year 12 Term 2</p>	<p>Unit 2: Practical Scientific Procedures and Techniques</p> <p>> Learners will undertake the remaining 2 learning aims from this unit:</p> <p>C Undertake chromatographic techniques to identify components in mixtures</p>	<p>Both learning aims in this term are internally assessed coursework portfolios including:</p> <p>> For learning aim C:</p> <p>C1 Chromatographic techniques</p> <p>C2 Application of chromatography</p> <p>C3 Interpretation of a chromatogram</p> <p>> For learning aim D:</p>	<p>Cont.</p> <ul style="list-style-type: none"> • Intrapersonal skills: communicating, working collaboratively, negotiating, and influencing, self-presentation • Interpersonal skills: self-management, adaptability and resilience, self-

	<p>D Review personal development of scientific skills for laboratory work</p>	<p>D1 Personal responsibility D2 Interpersonal skills D3 Professional practice</p>	<p>monitoring, and development</p>
<p>Year 12 Term 3</p>	<p>Unit 8: Physiology of Human Body Systems</p> <p>> Learners will focus on the physiological make up of three human body systems (musculoskeletal, lymphatic and digestive), how the systems function and what occurs during dysfunction</p> <p>> Learners will undertake the first two learning aims from this unit:</p> <p>A Understand the impact of disorders of the musculoskeletal system and their associated corrective treatments B Understand the impact of disorders on the physiology of the lymphatic system and the associated corrective treatments</p>	<p>Both learning aims in this term are internally assessed coursework portfolios including:</p> <p>> For learning aim A: A1 Structure of the musculoskeletal system A2 Function of the musculoskeletal system A3 Health matters and treatments related to the musculoskeletal system</p> <p>> For learning aim B: B1 Structure of the lymphatic system B2 Function of the lymphatic system B3 Health matters and treatments related to the lymphatic system</p>	<p>This unit offers a unique opportunity for those planning to join the continually health and sports related industries to:</p> <p>Gain understanding of physiological systems by research, video, modelling, simulations, and live dissections to analyse the structure and function of the musculoskeletal system</p> <p>Discover the unsung immune systems equivalent to the circulatory system and the collection of functions that keep us healthy and protected from harmful invaders</p>

<p>Year 12 Term 4</p>	<p>Unit 8: Physiology of Human Body Systems</p> <p>> Learners will complete the third learning aim for this unit: C Explore the physiology of the digestive system and the use of corrective treatments for dietary-related diseases</p>	<p>The learning aims this term are internally assessed coursework portfolios including:</p> <p>> For learning aim C: C1 Structure of the digestive system C2 Function of the digestive system C3 Health matters and treatments related to the digestive system</p>	<p>Cont.</p> <p>Further to explore the processing power of the digestive system as it turns food into digestible particles that can repair, protect, and fuel our every function</p>
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<p>Year 12 Term 5</p>	<p>Unit 1: Principles and Applications of Science</p> <p>> Learners will cover some of the key science concepts in biology, chemistry, and physics.</p> <p>> Learners will complete the first 2 learning aim for this unit:</p> <p>A Periodicity and properties of elements</p> <p>B Structure and functions of cells and tissues</p>	<p>The learning aims in this unit are externally assessed through sitting 3 x 40minute exams on consecutive days</p> <p>> For learning aim A:</p> <p>A1 Structure and bonding in applications in science</p> <p>A2 Production and uses of substances in relation to properties</p> <p>> For learning aim B:</p> <p>B1 Cell structure and function</p> <p>B2 Cell specialisation</p> <p>B3 Tissue structure and function</p>	<p>Scientists and technicians working in the chemical industry need to have an understanding of atoms and electronic structure. This allows them to predict how chemical substances will react in the production of a wide range of products</p> <p>Medical professionals need to understand the structure and workings of cells. They build on this knowledge to understand how the body stays healthy as well as the symptoms and causes of some diseases. This allows them to diagnose and treat illnesses</p>
<p>Year 12 Term 6</p>	<p>Unit 1: Principles and Applications of Science</p> <p>> Learners will undertake the remaining learning aim:</p> <p>C Waves in communication</p>	<p>Cont.</p> <p>> For learning aim C:</p> <p>C1 Working with waves</p> <p>C2 Waves in communication</p> <p>C3 Use of electromagnetic waves in communication</p>	<p>Knowledge of waves is essential in a wide range of industries and organisations. In the communication industry, scientists and technicians apply their knowledge of the electromagnetic spectrum when designing mobile phone and satellite communication, and fibre optics are used to transmit telephone and television signals</p>

<p>Year 13 Term 1</p>	<p>Unit 3: Science Investigation Skills</p> <p>A Planning a scientific investigation</p> <p>A1 Developing a hypothesis for an investigation</p> <p>A2 Selection of appropriate equipment, techniques, and standard procedures</p> <p>A3 Health and safety associated with the investigation</p> <p>A4 Variables in the investigation</p> <p>A5 Method for data collection and analysis</p> <p>B Data collection, processing, and analysis/interpretation</p> <p>B1 Collection of quantitative/qualitative data</p> <p>B2 Processing data</p> <p>C Drawing conclusions and evaluations</p> <p>C1 Interpretation/analysis of data</p> <p>C2 Evaluation</p>	<p>The learning aims in this unit are externally assessed through the undertaking of a three-hour supervised investigation and then sitting an associated 90-minute exam</p>	<p>Advancement in science and technology has produced great benefits for society. This advancement depends on research and investigative approaches in science and technology. In research, development, analytical and industrial laboratories, laboratory technicians and scientists are employed to safely carry out practical investigations or follow prescribed laboratory procedures</p>
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Year 13 Term 2	<p>Cont.</p> <p>D Enzymes in action E Diffusion of molecules F Plants and their environment G Energy content of fuels H Electrical circuits</p>		<p>Science investigative skills will help you in many scientific or enquiry-based learning courses in higher education, as well as prepare you for employment in a science-related industry</p>
Year 13 Term 3	<p>Preparation for Public Examinations for</p> <p>Unit 1: Principles and Applications of Science Unit 3: Science Investigation Skills</p>		
Year 13 Term 4	<p>Results analysis prior to Term 5 resitting for those requiring it</p>		
Year 13 Term 5	<p>Preparation for resitting Public Examinations for</p> <p>Unit 1: Principles and Applications of Science Unit 3: Science Investigation Skills</p>		
Year 13 Term 6	<p>N/A</p>		

For further information on this course please contact:

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