



Year 12 BTEC Applied Science



What have students at St. Crispin's been taught to understand and be able to do?

Core Knowledge

BTEC applied science Level 3 Extended certificate is equivalent in size to one A-Level. There are 4 units consisting of 3 mandatory units and 2 externally examined units.

Principles and applications of applied science (Mandatory, assessed external)

Scientists and technicians working in science and science-related organisations must have a good understanding of core science concepts. A strong grasp of these concepts will enable you to use and apply this knowledge and understanding in vocational contexts when studying other units within this specification. The topic areas covered in this unit include: animal and plant cells; tissues; atomic structure and bonding; chemical and physical properties of substances related to their uses; waves and their application in communications.

Practical scientific procedures and their techniques (Mandatory, course work based)

Learners will be introduced to quantitative laboratory techniques, calibration, chromatography, calorimetry and laboratory safety, which are relevant to the chemical and life science industries.

This unit introduces you to standard laboratory equipment and techniques, including titration, colorimetry, calorimetry, chromatography, calibration procedures and laboratory safety.

Through the practical tasks in the unit, you will develop proficiency in the quantitative analytical techniques of titration and colorimetry, including learning to calculate the concentration of solutions.

Core Skills

Unit 1

Prepare reports.

Unit 2

A Undertake titration and colorimetry to determine the concentration of solutions

B Undertake calorimetry to study cooling curves

C Undertake chromatographic techniques to identify components in mixtures

D Review personal development of scientific skills for laboratory work.



Year 12 BTEC Applied Science continued



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Core Knowledge

You will use measurement of temperature to study cooling curves and be introduced to paper and thin-layer chromatography (TLC). You will also have the opportunity to calibrate equipment and will be encouraged to be aware of the safety aspects of given laboratory procedures and techniques.

How has learning been assessed?

Assessment is specifically designed to fit the purpose and objective of the qualification. It includes a range of assessment types and styles suited to vocational qualifications in the sector. There are different forms of assessment that you need to be aware of: external, internal.

Externally-assessed units

Unit 1 is externally assessed. Each assessment is taken under specified conditions, then marked by Pearson and a grade awarded. Learners are permitted to resit external assessments during their programme. You should refer to the Pearson website for current policy information on permitted retakes.

The styles of external assessment used for qualifications in the Applied Science suite are:

- examinations – all learners take the same assessment at the same time, normally with a written outcome
- set tasks – learners take the assessment during a defined window and demonstrate understanding through completion of a vocational task. Some external assessments include a period of preparation using set information. External assessments are available twice a year.

Internally-assessed units

Unit 2 is internally assessed and subject to external standards verification. This means that we set and assess the assignments that provide the final summative assessment of each unit, using the examples and support that Pearson provides. Learners could be given opportunities to:

- write up the findings of their own research
- use case studies to explore complex or unfamiliar situations
- carry out projects for which they have choice over the direction and outcomes
- demonstrate practical and technical skills using appropriate equipment, procedures and techniques.

We will make grading decisions based on the requirements and supporting guidance given in the units. Learners may not make repeated submissions of assignment evidence.



Year 12 BTEC Applied Science continued



What is coming up in the following year?

Students will deepen their practical knowledge and skills by completing the unit of Scientific skills and investigation. Students have the opportunity to explore and explain rates of diffusion and resistance in electrical circuits. They will also complete a unit in human anatomy and physiology which takes a detailed look at the musculoskeletal, digestive and lymphatic systems.



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3 Science investigation skills (Mandatory, assessed externally).

Learners will cover the stages involved and the skills needed in planning a scientific investigation: how to record, interpret, draw scientific conclusions and evaluate.

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. They repeat measurements to obtain consistent, reliable results. They use investigative skills, including planning, recording and interpreting data, analysing and evaluating findings in order to test a hypothesis to inform further research and development.

8 Physiology of Human Body Systems (optional unit, course work based)

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.

Core Skills

Unit 8

Prepare reports.

Unit 3

- **AO1** Demonstrate knowledge and understanding of scientific concepts, procedures, processes and techniques and their application in a practical investigative context
- **AO2** Interpret and analyse qualitative and quantitative scientific information to make reasoned judgements and draw conclusions based on evidence in a practical investigative context
- **AO3** Evaluate practical investigative procedures used and their effect on the qualitative and quantitative scientific information obtained to make reasoned judgements
- **AO4** Be able to make connections between different scientific concepts, procedures, processes and techniques to make a hypothesis and write a plan for a practical investigation.



Year 13 BTEC Applied Science continued



What have students at St. Crispin's been taught to understand and be able to do?

The human body is a complex mix of organs and organ systems. Knowledge of how they function to maintain human life is an essential part of the study of human physiology. In this unit, you will focus on three body systems: musculoskeletal, lymphatic and digestive. You will examine each of the systems as a functioning unit, identifying their structure and function. By exploring the anatomy of these systems, through experimentation and use of simulations, you will develop your knowledge and understanding of their role in the human body.

How has learning been assessed?

Assessment is specifically designed to fit the purpose and objective of the qualification. It includes a range of assessment types and styles suited to vocational qualifications in the sector. There are different forms of assessment that you need to be aware of: external, internal.

Externally-assessed units

Unit 3 is externally assessed. Each assessment is taken under specified conditions, then marked by Pearson and a grade awarded. Learners are permitted to resit external assessments during their programme. You should refer to the Pearson website for current policy information on permitted retakes.

The styles of external assessment used for qualifications in the Applied Science suite are:

1. examinations - all learners take the same assessment at the same time, normally with a written outcome
2. set tasks - learners take the assessment during a defined window and demonstrate understanding through completion of a vocational task. Some external assessments include a period of preparation using set information. External assessments are available twice a year.

Internally-assessed units

Unit 8 is internally assessed and subject to external standards verification. This means that we set and assess the assignments that provide the final summative assessment of each unit, using the examples and support that Pearson provides. Learners could be given opportunities to:

- write up the findings of their own research
- use case studies to explore complex or unfamiliar situations
- carry out projects for which they have choice over the direction and outcomes
- demonstrate practical and technical skills using appropriate equipment, procedures and techniques.

We will make grading decisions based on the requirements and supporting guidance given in the units. Learners may not make repeated submissions of assignment evidence.



Year 13 BTEC Applied Science continued



What is coming up in the following year?

Many of our students go onto further study, some will use their BTEC to gain University entry, whilst others may pursue apprenticeships in scientific fields. Previous students have used their qualifications to enter the healthcare settings and go on the further study in a broad range of disciplines including paramedic science. Others have used the transferable practical and communication skills learnt through this course to be successful in other industries.