

Pearson Btec Level 3 National Extended Certificate in Applied Science (360 GLH) - Long Term Plan

Pearson Btec applied science is a 360 GLH qualification equivalent to one A level. It comprises four units of which two are externally assessed and two internally. Delivery structure is designed to meet the following objectives; to facilitate delivery by two teachers independently of each other; build on knowledge in a 'spiral curriculum' manner; to give learners opportunity to retake the external assessments later in the course.

The Year 12 content comprises two units; Principles and applications of Science; Practical Scientific skills and techniques. It is usually taught by two teachers, with different specialisms. A similar model is followed for Year 13.

BTEC Nationals have always required applied learning that brings together knowledge and understanding (the cognitive domain) with practical and technical skills (the psychomotor domain). This is achieved through learners performing vocational tasks that encourage the development of appropriate vocational behaviours (the affective domain) and transferable skills. Transferable skills are those such as communication, teamwork, research and analysis, which are valued in both higher education and the workplace.

Assessment Objectives:

AO1 Demonstrate knowledge of scientific facts, terms, definitions and scientific formulae

Command words: give, label, name, state

AO2 Demonstrate understanding of scientific concepts, procedures, processes and techniques and their application

Command words: calculate, compare, discuss, draw, explain, state, write

AO3 Analyse, interpret and evaluate scientific information to make judgements and reach conclusions

Command words: calculate, comment, compare, complete, describe, discuss, explain, state

AO4 Make connections, use and integrate different scientific concepts, procedures, processes or techniques

Command words: comment, compare, complete, discuss, explain

Externally-assessed units

Each external assessment for a BTEC National is linked to a specific unit. All of the units developed for external assessment are of 90 or 120 GLH to allow learners to demonstrate breadth and depth of achievement. Each assessment is taken under specified conditions, then marked by Pearson and a grade awarded. Learners must achieve all external units at pass grade or above. 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 and learners can have only one resit attempt during the programme.

Internally-assessed units

All internally assessed units are subject to external standards verification. In line with the requirements and guidance for internal assessment, Learners are 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.

Year 12 Content:

Unit 1 - Principles and applications of Science (90 GLH) - Externally Assessed

This unit covers some of the key science concepts in biology, chemistry and physics. 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.

This unit will be assessed through a written exam worth 90 marks, which is set and marked by Pearson. The exam will last one hour and 30 minutes. The paper is split into three sections, each worth 30 marks:

- Section A – Biology
- Section B – Chemistry
- Section C – Physics.

The paper will include a range of question types, including multiple choice, calculations, short answer and open response. These question types will assess discrete knowledge and understanding of the content in this unit.

The assessment availability is January and May/June each year.

Links to other units:

- Unit 2: Practical Scientific Procedures and Technique (Builds on Knowledge from this unit)
- Unit 3: Science Investigation Skills (Builds on Knowledge from this unit)
- Unit 12: Diseases and Infections (Builds on Knowledge from this unit)

Unit 2 - Practical Scientific Procedures and Techniques (90 GLH) - Internally Assessed

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

Learning aims:

- 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.

Links to other units:

- Unit 1: Principles and Applications of Science (Needs to be delivered prior to this unit)
- Unit 3: Science Investigation Skills (Builds on Knowledge from this unit)

Year 13 Content:**Unit 3 - Practical Scientific Procedures and Techniques (120 GLH) - Externally Assessed**

Learners will cover the stages involved and the skills needed in planning a scientific investigation: how to record, interpret, draw scientific conclusions and evaluate. This unit will be assessed through a written taskbook (Part B) worth 60 marks. The task is set and marked by Pearson and will be completed in one sitting, within a supervised assessment period of one week. The assessment availability is in December/January and May/June.

Assessment outcomes

- 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

Links to other units:

- Unit 1: Principles and Applications of Science (Needs to be delivered prior to this unit)
- Unit 2: Practical Scientific Procedures and Techniques (Needs to be delivered prior to this unit)

Unit 12 - Disease and Infection (60 GLH) - Internally Assessed

Learners will gain understanding of five types of diseases, their causes and how humans try to prevent and treat them.

Learning aims:

- A Investigate different types of diseases and infections that can affect humans
- B Examine the transmission of infectious diseases and how this can be prevented
- C Understand how infectious diseases can be treated and managed
- D Understand how the human body responds to diseases and infections.

Links to other units:

- Unit 1: Principles and Applications of Science (Needs to be delivered prior to this unit)
- Unit 2: Practical Scientific Procedures and Techniques (Needs to be delivered prior to this unit)

Applied Science Year 12 LTP

	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
Teacher 1	Unit 1: Principles and Applications of Science - Biology Content	Unit 1: Principles and Applications of Science - Biology Content	Unit 1: Principles and Applications of Science - Chemistry Content	Unit 2: Practical Scientific Procedures and Techniques Learning Aim A	Unit 2: Practical Scientific Procedures and Techniques Learning Aim C Unit 1 External exam - Revision	Unit 2: Practical Scientific Procedures and Techniques Learning Aim C Unit 1 External exam
Teacher 2	Unit 1: Principles and Applications of Science - Physics Content	Unit 1: Principles and Applications of Science - Physics Content	Unit 1: Principles and Applications of Science - Chemistry Content	Unit 2: Practical Scientific Procedures and Techniques Learning Aim B	Unit 2: Practical Scientific Procedures and Techniques Learning Aim D Unit 1 External exam - Revision	Unit 2: Practical Scientific Procedures and Techniques Learning Aim D Y12 PPE Exam revision

The content of unit 1 can be organised to match the specialism of the staff delivering the course

Applied Science Year 13 LTP

	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
Teacher 1	Unit 3: Science Investigation Skills - Sections A, B	Unit 3: Science Investigation Skills - Sections D, F Revision for Unit 1 Retake Unit 3 First attempt	Revision for Unit 1 Retake Unit 3 First attempt Unit 12 LA A	Unit 12 LA B	Unit 12 LA C	Unit 12 LA D
Teacher 2	Unit 3: Science Investigation Skills - Sections C, E	Unit 3: Science Investigation Skills - Sections G, H Revision for Unit 1 Retake Unit 3 First attempt	Revision for Unit 1 Retake Unit 3 First attempt	Unit 12 LA B Revision for: Unit 1 Retake Unit 3 Retake	Unit 12 LA C Revision for: Unit 1 Retake Unit 3 Retake	Unit 12 LA D Revision for: Unit 1 Retake Unit 3 Retake

