



Level 3 Advanced National in Applied Science



NOTES:

Level 3 Alternative academic qualification

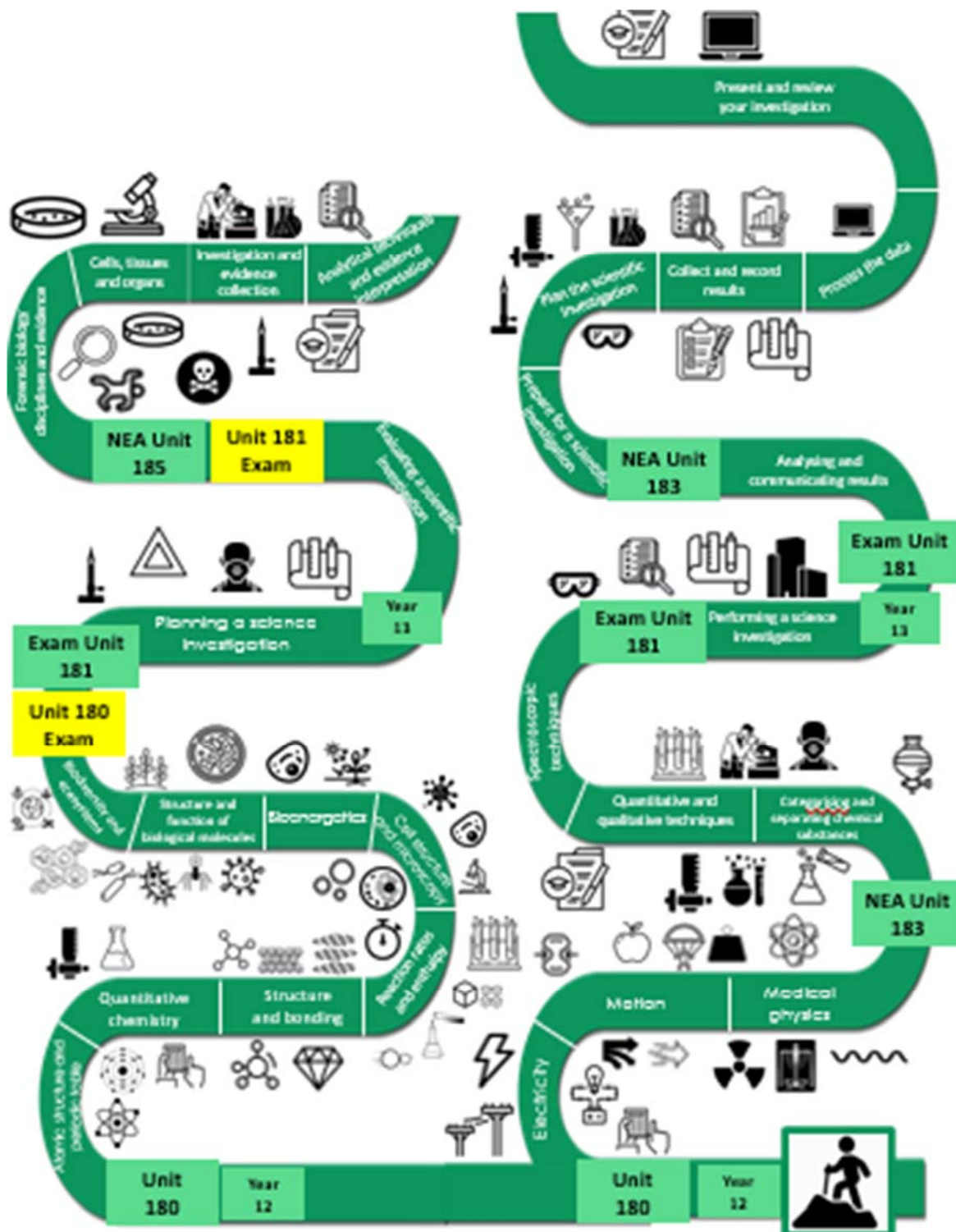
Cambridge Advanced National in Applied Science

Content

- Unit 180 (examined May 2026) – Fundamentals of Science
- Unit 181 (examined Jan 2027) – Science in society
- Unit 183 (coursework) – Analytical techniques in Chemistry
- Unit 182 (coursework) – Investigating Science
- Unit 186 (coursework) – Forensic Biology

- 10 hrs classroom teaching per 2 weeks.
- Smaller class sizes – around 18 students.
- 2 members of staff responsible for your teaching, delivering areas of the syllabus in parallel.
- Practical activities embedded within the course.
- Dedicated coursework time.
- Soft deadlines to allow teachers to check and give advice on coursework tasks.
- Plenty of on-going assessment so you are sure of the level you are working at and towards.
- You are also expected to work independently to develop your own study skills.

Applied Science Learning Journey



What will you be taught?

Year 12

Unit 180 - Fundamentals of Science – Examined May 2026

In this unit you will learn about the structure and composition of substances and how they can combine to form new useful substances. Exploring living systems is equally rewarding, enabling you to find out more about yourself and how you are placed in your environment. You will also explore electrical circuits which will support understanding of applications of Physics, the fundamental theory which supports medical physics, and how we can interpret data about the physical world.

Unit 183 – Analytical techniques in Chemistry – Coursework

In this unit you will learn how to plan and perform practical investigations to separate substances and purify them. You will also learn how to categorise different types of substance according to their physical properties and determine amounts present in a substance or solution. You will develop the skills to use chemical tests to identify the presence of specific ions and molecules and interpret spectra to provide information about the structure of molecules.

Year 13

Unit 181 – Science in society – Examined Jan 2027

In this unit you will learn about the skills scientists use and the roles they perform in an international scientific community. You will examine different types of scientific data and learn how scientists use them to draw conclusions that can contribute to scientific advancement. You will investigate what makes a scientific theory different to a scientific law by reviewing past scientific discoveries.

Unit 183 – Investigating Science – Coursework

You will learn how to collect and analyse data and communicate your findings in a scientific report and a presentation. Finally, you will develop the skills to evaluate your investigation, including assessing the effectiveness of the methods used and suggesting improvements that could be made.

Unit 186 – Forensic Biology – Coursework

In this unit you will learn how to perform investigations of the macro- and ultrastructure of cells and tissues from fresh and prepared material, using optical microscope techniques and electron micrographs. You will develop the skills to complete the safe culturing of bacteria and to perform practical investigations to collect, log and analyse biological evidence using standard procedures.

Practical – Identifying ions

You will attempt to identify unknown cations and anions in order to distinguish the unknown compounds given.

You are provided with the following:

Flame Test	Sodium Hydroxide Test
1 mol/dm ³ lithium chloride (aq)	0.1 mol/dm ³ magnesium sulfate (aq)
1 mol/dm ³ sodium chloride (aq)	0.1 mol/dm ³ calcium chloride (aq) - irritant
1 mol/dm ³ potassium chloride (aq)	0.1 mol/dm ³ aluminium sulfate (aq)
1 mol/dm ³ calcium chloride (aq) - irritant	0.1 mol/dm ³ iron (III) chloride (aq) - irritant
1 mol/dm ³ copper (II) chloride (aq)	0.1 mol/dm ³ copper (II) sulfate (aq) - harmful
nichrome wire mounted in a handle	0.1 mol/dm ³ iron(II) sulfate (aq) - harmful
concentrated hydrochloric acid - corrosive	0.4 mol/dm ³ sodium hydroxide - corrosive
Bunsen burner	test tubes and rack
test tubes and rack	droppers

Test 1 – Flame test

1. Pour around 1 cm depth of each of the labelled chloride solutions into five test tubes in the rack.
2. Dip the nichrome wire into concentrated hydrochloric acid and heat the tip of the wire in a blue Bunsen burner flame.
3. Dip it into the acid again, and then dip it into the first solution.
4. Hold the tip of the wire in a blue Bunsen burner flame. Record your observations in the results table.
5. Clean the wire carefully between tests by dipping it into the acid and heating it in the Bunsen flame.
6. Repeat steps 3 to 5 for the other four solutions in turn.

Test 2 - Sodium Hydroxide Test

1. Put 2 cm³ of the test solution in a test tube then add sodium hydroxide solution drop-wise until no further change.
2. Note the colour of the precipitate and whether it dissolves in excess sodium hydroxide.
3. Repeat for each test solution in turn and record your results in the table.

Observations

Flame Test

Test solution	Metal Ion Present	Colour of Flame
Lithium chloride		
Sodium chloride		
Potassium chloride		
Calcium chloride		
Copper (II) chloride		

Sodium Hydroxide Test

Test solution	Metal Ion Present	Observation with sodium hydroxide	
		Colour of Precipitate	Does it dissolve in excess NaOH?
Magnesium sulfate, MgSO ₄ (aq)			
Calcium chloride, CaCl ₂ (aq)			
Aluminium sulfate, Al ₂ (SO ₄) ₃ (aq)			
Iron (II) sulfate, FeSO ₄ (aq)			
Iron (III) chloride, FeCl ₃ (aq)			
Copper (II) sulfate, CuSO ₄ (aq)			

What you should do next . . .

- Complete the Applied Science summer transition work and bring it with you on the first day back!
- You must purchase your Lab coat and glasses and bring them in your first week in September. Without these you will not be able to complete the practical aspect of Applied Science which is an essential and will affect you completion of the course.
- Purchase two large folders, dividers, paper and possibly plastic wallets to keep all your work organised!