Cornwallis Academy
Ambitions for All

SMILE
SUCCESSFUL | MOTIVATED | INSPIRED | LEARNING | EXCITED & ENGAGED

GCSE Biology

Curriculum Intent

The intent of the GCSE Biology curriculum is to develop students who have a **secure and connected understanding of biological concepts**, can apply their knowledge to familiar and unfamiliar situations, and understand how scientific knowledge is developed through investigation and evidence.

Students study Cell Biology, Organisation, Infection and Response, Bioenergetics, Homeostasis and Response, Inheritance, Variation and Evolution, and Ecology. The curriculum should also develop the ability to make connections between these areas rather than viewing them as isolated topics. AQA-8461-SP-2016 Biology

A strong curriculum should develop students' ability to:

- build scientific knowledge and conceptual understanding;
- apply biological knowledge to new contexts;
- develop practical, observational, modelling, enquiry and problem-solving skills;
- analyse and interpret quantitative and qualitative evidence;
- evaluate scientific claims and draw evidence-based conclusions;
- use appropriate scientific vocabulary and mathematical skills;
- understand how science relates to everyday life and wider society;
- develop the knowledge and skills required for progression to A-level and other post-16 courses.

Importantly, **working scientifically is embedded throughout the curriculum**, rather than taught as a separate topic. Including investigating, observing, experimenting, testing ideas, communicating science and representing ideas mathematically and through models

Assessment, Marking and Feedback

The assessment process in GCSE Biology is designed to monitor progress, inform teaching, and support student learning. It ensures students are developing scientific knowledge, understanding, and practical skills across Biology, Chemistry, and Physics.

Assessment Details

Paper	Length of exam	Weighting of GCSE Biology Qualification	Units assessed
Biology Paper 1	1hr 15 mins	50%	B1–B4 (Cell Biology, Organisation, Infection & Response, Bioenergetics)
Biology Paper 2	1hr 15 mins	50%	B5–B7 (Homeostasis, Inheritance & Variation, Ecology)

Key Points:

1. **Formative Assessment (Ongoing)**
    a. Short quizzes, homework (Sparx), in-class questions, practical tasks.
    b. Focuses on understanding and application, not just recall.
    c. Provides instant feedback to correct misconceptions early.
2. **Summative Assessment (Formal Tests/Exams)**
    a. End-of-topic tests, Cumulative tests that cover more than one topic, mock exams, past-paper questions.
    b. Assesses knowledge, problem-solving, data analysis, and exam technique.

c. Uses mark schemes aligned to AQA standards through Exampro.
d. Use of gap analysis documents for each cumulative test and PPE.

3. **Practical Assessment and "Working Scientifically"**
   a. Students complete experiments, record results, and evaluate methods.
   b. Teachers assess accuracy, safety, observation, and interpretation.
   c. Contributes indirectly to final grades through exam questions on practical skills.
4. **Marking and Feedback**
   a. Verbal feedback, self/peer assessment, and model answers.
   b. Emphasizes next steps, e.g., correcting misconceptions, reattempting calculations, refining explanations.
5. **Tracking Progress**
   a. Teachers monitor performance across all topics and papers to identify gaps.
   b. Feedback informs targeted intervention, revision planning, and differentiated support.

Homework

Sparx Science is an online homework platform designed to support students' learning in science through regular, personalised practice. The platform sets targeted tasks that align with the curriculum and provides immediate feedback, helping students identify and correct misconceptions independently. By combining retrieval practice, knowledge checks, and guided support, Sparx Science encourages consistent study habits and improves long-term retention of key scientific concepts. The platform also allows teachers to monitor progress, identify areas where students need additional support, and ensure that homework is meaningful, accessible, and tailored to individual learning needs. Students can log in to this website using their school Microsoft login details.

Links to National Curriculum / Syllabus Specifications

Key Stage 4 National Curriculum
AQA-8461-SP-2016 Biology
National curriculum in England: science programmes of study - GOV.UK

Exam Support & Revision Resources

Revision resources

- Lots are hosted on TEAMs / SharePoint -
- Sparx Science – homework and independent challenge
- Revision guides - Available at a discounted price through the school via ParentPay
- Revision sessions available at lunchtime and afterschool.

Useful websites

- Cognito - Dashboard | Cognito
- YouTube – Science shorts, primrose kitten - Primrose Kitten Academy | GCSE & A-Level Revision - YouTube, Malmesbury Education (required practical's) - Malmesbury Education - YouTube
- PMT – for past papers and mark schemes, Practice questions, mind maps and much more. - Physics & Maths Tutor

Extracurricular and Enrichment Opportunities

- Dr Cherry to hold intervention workshops during curriculum time
- Year 11 revision sessions at lunch time and after school
- Assemblies – World Aids Day, Science Week, Space week

Interested to know more?

To read:

- **The Selfish Gene" – Richard Dawkins**
  Explains evolution and natural selection in an engaging, story-like way.
  Connects to GCSE topics like inheritance, variation, and evolution.
- **"The Body: A Guide for Occupants" – Bill Bryson**
  Fascinating, humorous tour of human anatomy and physiology.
  Reinforces homeostasis, organ systems, and cell biology.

To watch:

- Human Universe – Space, evolution and the development of humanity. Human Universe - BBC iPlayer
- The Blue Planet – Marine ecosystems and biodiversity. The Blue Planet - BBC iPlayer
- Inside the Human Body – Human biology and homeostasis. BBC One - Inside the Human Body - Episode guide
- Our Planet – Ecology, conservation and climate change.Watch Our Planet - YouTube
- **Planet Earth** – Biology and Ecology BBC One - Planet Earth
- **The Secret Life of Chaos** – Scientific thinking and enquiry BBC Four - The Secret Life of Chaos

To listen:

- The Naked Scientists
- 30 Animals That Made Us Smarter
- Science Weekly

To visit:

- The Historic Dockyard Chatham – Chatham, Kent
- Howletts Wild Animal Park – Canterbury, Kent

GCSE Chemistry

Curriculum Intent

Our intent in GCSE Chemistry is to provide an **ambitious, coherent and inclusive curriculum** that enables all students to develop a secure understanding of the fundamental principles of chemistry and recognise how these principles explain the material world around them. The curriculum follows the AQA GCSE Chemistry specification and is structured so that knowledge develops logically from **atomic structure and the periodic table through bonding, quantitative chemistry, chemical reactions, energy, rates, organic chemistry, chemical analysis, atmospheric chemistry and the sustainable use of resources**. AQA-8462-SP-2016 Chemistry

The curriculum is designed to:

- **Build strong foundational knowledge** and progressively connect new learning to prior knowledge, enabling students to see relationships between different areas of chemistry.
- Develop students' ability to **recall, apply and explain scientific concepts**, moving beyond simple factual knowledge towards deeper conceptual understanding.
- Develop confident use of **chemical vocabulary, symbols, formulae, equations, quantities and SI units**. AQA-8462-SP-2016 Chemistry
- Develop **mathematical fluency**, including proportional reasoning, calculations, interpreting data, graphs and quantitative relationships.

- Provide purposeful **practical experiences** so students develop competence in experimental techniques, planning investigations, controlling variables, making accurate observations and evaluating experimental methods. AQA-8462-SP-2016 Chemistry
- Embed **working scientifically** throughout the curriculum so students understand how scientific ideas are developed, tested and modified in response to evidence. AQA-8462-SP-2016 Chemistry
- Develop students' ability to **analyse evidence, identify patterns, interpret data, draw conclusions and evaluate scientific claims**.
- Make chemistry relevant by connecting learning to **everyday life, technology, industry, the environment and sustainability**.
- Provide appropriate challenge and support so that **all students can make progress**, including those studying Foundation and Higher Tier.
- Develop independent, resilient learners who can confidently approach unfamiliar scientific problems and apply their knowledge in new contexts.
- Prepare students effectively for **GCSE examinations and progression to A-level Chemistry and other post-16 scientific or STEM courses**. AQA specifically identifies progression in subject content and preparation for A-level as features of the qualification. AQA-8462-SP-2016 Chemistry

Ultimately, our curriculum aims to develop scientifically literate students who are curious about the material world, confident in using evidence and able to apply their chemical knowledge to explain, predict, analyse and evaluate scientific phenomena.

Assessment, Marking and Feedback

The assessment process in GCSE Chemistry is designed to monitor progress, inform teaching, and support student learning. It ensures students are developing scientific knowledge, understanding, and practical skills across Chemistry,

Assessment Details

Paper	Length of exam	Weighting of GCSE Chemistry Qualification	Units assessed
Chemistry Paper 1	1hr 15 mins	50%	C1–C5 (Atomic Structure, Bonding, Quantitative Chemistry, Chemical Changes, Energy Changes)
Chemistry Paper 2	1hr 15 mins	50%	C6–C10 (Rates & Extent, Organic Chemistry, Chemical Analysis, Atmosphere, Using Resources)

Key Points:

6. **Formative Assessment (Ongoing)**
    a. Short quizzes, homework (Sparx), in-class questions, practical tasks.
    b. Focuses on understanding and application, not just recall.
    c. Provides instant feedback to correct misconceptions early.
7. **Summative Assessment (Formal Tests/Exams)**

a. End-of-topic tests, Cumulative tests that cover more than one topic, mock exams, past-paper questions.
b. Assesses knowledge, problem-solving, data analysis, and exam technique.
c. Uses mark schemes aligned to AQA standards through Exampro.
d. Use of gap analysis documents for each cumulative test and PPE.

8. **Practical Assessment and "Working Scientifically"**
    a. Students complete experiments, record results, and evaluate methods.
    b. Teachers assess accuracy, safety, observation, and interpretation.
    c. Contributes indirectly to final grades through exam questions on practical skills.
9. **Marking and Feedback**
    a. Verbal feedback, self/peer assessment, and model answers.
    b. Emphasizes next steps, e.g., correcting misconceptions, reattempting calculations, refining explanations.
10. **Tracking Progress**
    a. Teachers monitor performance across all topics and papers to identify gaps.
    b. Feedback informs targeted intervention, revision planning, and differentiated support.

Homework

Sparx Science is an online homework platform designed to support students' learning in science through regular, personalised practice. The platform sets targeted tasks that align with the curriculum and provides immediate feedback, helping students identify and correct misconceptions independently. By combining retrieval practice, knowledge checks, and guided support, Sparx Science encourages consistent study habits and improves long-term retention of key scientific concepts. The platform also allows teachers to monitor progress, identify areas where students need additional support, and ensure that homework is meaningful, accessible, and tailored to individual learning needs. Students can log in to this website using their school Microsoft login details.

Links to National Curriculum / Syllabus Specifications

Key Stage 4 National Curriculum
AQA-8462-SP-2016 Chemistry
National curriculum in England: science programmes of study - GOV.UK

Exam Support & Revision Resources

Revision resources

- Lots are hosted on TEAMs / SharePoint -
- Sparx Science – homework and independent challenge
- Revision guides - Available at a discounted price through the school via ParentPay
- CGP practice exam papers available through parent pay
- Revision sessions available at lunchtime and afterschool.

Useful websites

- Cognito - Dashboard | Cognito
- YouTube – Science shorts, primrose kitten - Primrose Kitten Academy | GCSE & A-Level Revision - YouTube, Malmesbury Education (required practical's) - Malmesbury Education - YouTube
- PMT – for past papers and mark schemes, Practice questions, mind maps and much more. - Physics & Maths Tutor

Extracurricular and Enrichment Opportunities

- Dr Cherry to hold intervention workshops during curriculum time
- Year 11 revision sessions at lunch time and after school
- Assemblies – World Aids Day, Science Week, Space week

Interested to know more?

To read:

- **"The Disappearing Spoon" – Sam Kean**
  Stories about the elements of the periodic table.
  Makes atomic structure, chemical reactions, and periodic trends memorable.
- **"Stuff Matters" – Mark Miodownik**
  Explores materials science through everyday objects.
  Connects to bonding, properties, and materials in GCSE chemistry

To watch:

- Chemistry: a volatile history – BBC archive
- Understanding the Periodic Table
- **Bang goes the Theory** – Broad GCSE Science coverage BBC One - Bang Goes the Theory
- **The Secret Life of Chaos** – Scientific thinking and enquiry BBC Four - The Secret Life of Chaos

To listen:

- BBC Science Focus Podcast
- Science Vs
- The Naked Scientists

To visit:

- Royal Observatory Greenwich
- The Historic Dockyard Chatham – Chatham, Kent
- Howletts Wild Animal Park – Canterbury, Kent
- The National Space Centre: Exploring Space

GCSE Physics

Curriculum Intent

Our intent in GCSE Physics is to provide an **ambitious, coherent and inclusive curriculum** that enables all students to develop a secure understanding of the fundamental principles that explain the physical world. The curriculum follows the AQA GCSE Physics (8463) specification and builds knowledge progressively across **Energy, Electricity, Particle Model of Matter, Atomic Structure, Forces, Waves, Magnetism and Electromagnetism, and Space Physics**. AQA

The curriculum is designed to:

- **Build strong foundational knowledge**, making explicit links between prior learning at KS3 and increasingly challenging concepts at GCSE.
- Develop students' **scientific knowledge and conceptual understanding of physics**, enabling them to explain physical phenomena using a small number of interconnected key ideas. AQA
- Develop confident application of **mathematical skills**, including equations, proportional reasoning, rearranging formulae, graphs, standard form, significant figures and appropriate SI units.
- Enable students to **apply their knowledge to familiar and unfamiliar situations**, developing problem-solving skills rather than relying solely on recall.

- Develop understanding of important physical models, including the **particle, wave and atomic models**, and recognise how models can be used to explain observations and make predictions. AQA
- Embed **working scientifically** throughout the curriculum, developing students' ability to investigate, observe, measure, experiment, analyse evidence and evaluate scientific ideas. AQA
- Provide purposeful **practical experiences** that develop confidence in using apparatus, taking accurate measurements, controlling variables, analysing results and evaluating experimental methods.
- Develop students' ability to **interpret and analyse data**, identify patterns, construct and interpret graphs, draw conclusions and evaluate the quality of evidence.
- Develop accurate use of **scientific vocabulary, quantities, symbols and units**, alongside the ability to communicate explanations clearly and logically.
- Make physics **relevant to students' everyday lives**, demonstrating its importance in areas such as energy generation, electricity, transport, communications, medical applications, engineering and space.
- Provide appropriate **support and challenge for Foundation and Higher Tier students**, enabling all students to make progress while maintaining high expectations.
- Encourage **curiosity, resilience and independent thinking**, giving students confidence to approach unfamiliar scientific problems.
- Prepare students effectively for **GCSE examinations and progression to A-level Physics and other post-16 STEM courses and careers**. AQA identifies progression and preparation for A-level as an important feature of the qualification. AQA

Ultimately, our Physics curriculum aims to develop scientifically literate, confident and curious students who can use scientific knowledge, mathematical reasoning and evidence to explain the physical world, solve problems and make informed judgements.

Assessment, Marking and Feedback

The assessment process in GCSE Physics is designed to monitor progress, inform teaching, and support student learning. It ensures students are developing scientific knowledge, understanding, and practical skills across Physics.

Assessment Details

Paper	Length of exam	Weighting of GCSE Physics Qualification	Units assessed
Physics Paper 1	1hr 15 mins	50%	P1–P4 (Energy, Electricity, Particle Model, Atomic Structure & Radiation)
Physics Paper 2	1hr 15 mins	50%	P5–P8 (Forces, Waves, Magnetism & Electromagnetism, space)

Key Points:

1. **Formative Assessment (Ongoing)**
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Interested to know more?

To read:

- **"Why Does $E=mc^2$?" – Brian Cox & Jeff Forshaw**
  Explains Einstein's famous equation and energy-mass relationships.
  Connects to energy, mass, and physics thinking.
- **"The Elegant Universe" – Brian Greene**
  Introduces relativity, quantum physics, and string theory.
  Great for inspiring interest in advanced physics beyond the GCSE syllabus.

To watch:

- Cosmos: A Spacetime Odyssey – Astronomy, physics and scientific discovery. Cosmos: A Spacetime Odyssey (TV Mini Series 2014) - IMDb
- Our Planet – Ecology, conservation and climate change.Watch Our Planet - YouTube
- **Planet Earth** – Biology and Ecology BBC One - Planet Earth
- **Bang Goes the Theory** – Broad GCSE Science coverage BBC One - Bang Goes the Theory
- **Forces of Nature with Brian Cox** – Physics BBC One - Forces of Nature with Brian Cox
- **The Secret Life of Chaos** – Scientific thinking and enquiry BBC Four - The Secret Life of Chaos

To listen:

- Daniel and Jorge Explain the Universe
- The Infinite Monkey Cage
- BBC Science Focus Podcast

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- The National Space Centre: Exploring Space