Cornwallis Academy
Ambitions for All

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

GCSE Combined Science Trilogy

Curriculum Intent

The curriculum intent for AQA GCSE Combined Science Trilogy is to provide students with a broad, balanced and coherent understanding of biology, chemistry and physics, developing both scientific knowledge and practical skills. It aims to:

- Give all students a strong foundation in core scientific concepts across the three sciences.
- Develop scientific literacy, so students can understand and evaluate science in everyday life.
- Build understanding of how science works, including experimental methods, data analysis and evaluation.
- Ensure students can apply knowledge to unfamiliar contexts, real-world problems and exam questions.
- Develop key scientific skills such as working scientifically, practical investigation, measurement and interpretation of data.
- Prepare students for further study (A-level science, vocational courses) or science-related careers.
- Encourage understanding of the interconnected nature of science, including environmental, ethical and technological impacts.
- Promote critical thinking and problem-solving using scientific evidence.
- Ensure students understand key ideas in:
    - Biology (cells, organisation, infection, bioenergetics, homeostasis, inheritance, ecology)
    - Chemistry (atoms, bonding, reactions, rates, organic chemistry, atmosphere, resources)
    - Physics (energy, electricity, particle model, atomic structure, forces, waves, magnetism)

Overall, the intent is to develop students who are confident, informed, and able to use scientific understanding to explain the world around them and make evidence-based decisions.

Assessment, Marking and Feedback

The assessment process in Combined Science Trilogy 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 combined Science Qualification	Units assessed
Biology Paper 1	1hr 15 mins	16.7%	B1–B4 (Cell Biology, Organisation, Infection & Response, Bioenergetics)
Biology Paper 2	1hr 15 mins	16.7%	B5–B7 (Homeostasis, Inheritance & Variation, Ecology)
Chemistry Paper 1	1hr 15 mins	16.7%	C1–C5 (Atomic Structure, Bonding, Quantitative Chemistry, Chemical Changes, Energy Changes)
Chemistry Paper 2	1hr 15 mins	16.7%	C6–C10 (Rates & Extent, Organic Chemistry, Chemical Analysis, Atmosphere, Using Resources)
Physics Paper 1	1hr 15 mins	16.7%	P1–P4 (Energy, Electricity, Particle Model, Atomic Structure & Radiation)
Physics Paper 2	1hr 15 mins	16.7%	P5–P7 (Forces, Waves, Magnetism & Electromagnetism)

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
GCSE Science 8464 | Specification | AQA
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

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.
- **"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
- **"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:

- 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
- 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:

Biology

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

Chemistry

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

Physics

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

To visit:

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

- The National Space Centre: Exploring Space