

# GCSE Combined Science: Trilogy

Double award

#### Exams

Six papers: two biology, two chemistry and two physics. Each will assess different topics.

Duration: all the papers are 1 hour 15 minutes.

Tiers: Foundation and Higher.

Weighting: the papers are equally weighted. Each is worth 16.7% of the grade and has 70 marks.

Question types: multiple choice, structured, closed, short answer and open response.

#### Summary of content

#### **Biology**

- Cell biology
- Organisation
- Infection and response
- Bioenergetics
- Homeostasis and response
- · Inheritance, variation and evolution
- Ecology

#### Chemistry

- Atomic structure and the periodic table
- Bonding, structure, and the properties of matter
- Quantitative chemistry
- Chemical changes
- Energy changes
- The rate and extent of chemical change
- Organic chemistry
- Chemical analysis
- Chemistry of the atmosphere
- Using resources

#### **Physics**

- Forces
- Energy
- Waves
- Electricity
- Magnetism and electromagnetism
- Particle model of matter
- Atomic structure

#### **Biology Paper 1**

#### What's assessed

Cell biology, organisation, infection & response and bioenergetics

#### How it's assessed

Written exam: 1 hour 15 minutes 70 marks 16.7% of GCSE

#### Questions

Multiple choice, structured, closed short answer and open response

### Biology Paper 2

#### What's assessed

Homeostasis and response, inheritance, variation & evolution and ecology

#### How it's assessed

Written exam: 1 hour 15 minutes 70 marks 16.7% of GCSE

#### Questions

Multiple choice, structured, closed short answer and open response

#### **Chemistry Paper 1**

#### What's assessed

Atomic structure & periodic table, bonding, structure & properties of matter, quantitative chemistry, chemical changes and energy changes

#### How it's assessed

Written exam: 1 hour 15 minutes 70 marks 16.7% of GCSE

#### Questions

Multiple choice, structured, closed short answer and open response

#### **Chemistry Paper 2**

#### What's assessed

The rate & extent of chemical change, organic chemistry, chemical analysis, chemistry of the atmosphere and using resources

#### How it's assessed

Written exam: 1 hour 15 minutes 70 marks 16.7% of GCSE

#### Questions

Multiple choice, structured, closed short answer and open response

#### **Physics Paper 1**

#### What's assessed

Energy, electricity, particle model of matter and atomic structure

#### How it's assessed

Written exam: 1 hour 15 minutes 70 marks 16.7% of GCSE

#### Questions

Multiple choice, structured, closed short answer and open response

#### **Physics Paper 2**

#### What's assessed

Forces, waves & magnetism and electromagnetism

#### How it's assessed

Written exam: 1 hour 15 minutes 70 marks 16.7% of GCSE

#### Questions

Multiple choice, structured, closed short answer and open response



## GCSE Combined Science Trilogy: Biology

Biology Paper 1	
Cell Biology	
Cells	
Microscopy	
Cell differentiation & specialisation	
Chromosomes & mitosis	
Stem cells	
Diffusion	
Osmosis	
Active transport	
Exchange surfaces	
Exchanging substances	
Organisation	
Cell organisation	
Enzymes and reactions	
Enzymes & digestion	
The lungs	
Circulatory system; heart, , blood vessels & blood	
Cardiovascular disease	
Health & disease	
Non-communicable disease	
Cancer	
Plant cell organisation	
Transpiration & Translocation	
Transpiration & stomata	
Infection & Response	
Communicable disease	
Viral, fungal & protist diseases	
Bacterial diseases and preventing diseases	
Fighting disease, vaccination & drugs	
Developing drugs	
Bioenergetics	
Photosynthesis & limiting factors	
The rate of photosynthesis	
Respiration & metabolism	
Aerobic & anaerobic respiration	

Biology Paper 2				
Homeostasis & response				
Homeostasis				
The nervous system				
Synapses and reflexes				
Investigating reaction time				
The endocrine system				
Controlling blood glucose				
Puberty & the menstrual cycle				
Controlling fertility				
Adrenaline & thyroxine (Higher)				
Inheritance, Variation & Evolution				
DNA				
Reproduction				
Meiosis				
X & Y chromosomes				
Genetic diagrams				
Inherited disorders				
Variation				
Evolution				
Selective breeding				
Genetic engineering				
Fossils				
Antibiotic resistant bacteria (Higher)				
Classification				
Ecology				
Competition				
Abiotic & Biotic factors				
Adaptations				
Food chains				
Using quadrats				
Using transects				
The water cycle				
The carbon cycle				
Biodiversity & waste management				
Global warming				
Deforestation & land use				
Maintaining ecosystems & biodiversity				

Atomic structures and the periodic table  Atoms  Elements  Compounds  Chemical equations  Separation techniques, mixtures & chromatography  Distillation  History of the atom  Electronic structure  Development of the periodic table  The modern periodic table  Metals & non-metals  Group 1 elements  Group 7 elements  Group 0 elements  Bonding structure & properties of matter  Formation of ions  Ionic bonding  Ionic compounds  Covalent bonding  Simple molecular substances  Polymers & giants covalent structures  Allotropes of carbon  Metallic bonding  States of matter  Changing state  Quantitative Chemistry  Relative formula mass  The mole  Conservation of mass  The mole & equations (Higher)  Limiting reactants (Higher)  Econocentrations of solutions  Chemical changes  Separating metals from metal oxides (Higher)  Electrolysis  Electrolysis of aqueous solutions  Energy Changes  Exothermic & endothermic reactions  Bond energies (Higher)	Chemistry Paper 1	17 <sup>th</sup> May 2018
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	Bond energies (Higher)	



## **GCSE Combined Science Trilogy: Physics**

Physics Paper 1	
<u>Energy</u>	
Energy stores & systems	
Kinetic & potential energy stores	
Specific heat capacity	
Conservation of energy and power	
Reducing unwanted energy transfers	
Efficiency	
Energy resources & their uses	
Wind, solar & geothermal	
Hydro-electricity, waves & tides	
Bio-fuels and non-renewables	
Trends in energy resource use	
Electricity	
Current & circuit symbols	
Resistance & V=IR	
Resistance and I-V characteristics	
Circuit devices	
Series circuits	
Parallel circuits	
Investigating resistance	
Electricity in the home	
Power	
The national grid	
Particle model of matter	
The particle model & motion in gases	
Density of materials	
Internal energy and changes of state	
Specific latent heat	
Atomic structure	
Developing the model of the atom	
Isotopes and nuclear radiation	
Nuclear equations	
Half-life	
Irradiation & contamination	

Physics Paper 2				
Forces				
Contact & non-contact forces				
Weight, mass & gravity				
Resultant forces & work done				
Calculating forces (Higher)				
Forces & elasticity				
Investigating springs				
Distance, displacement, speed & velocity				
Acceleration				
Distance-time & velocity-time graphs				
Terminal velocity				
Newton's First & Second laws				
Inertia & Newton's Third law				
Investigating motion				
Stopping distances				
Reaction times				
Momentum (Higher)				
Waves				
Transverse & longitudinal waves				
Experiments with waves				
Wave behaviour & electromagnetic waves				
Refraction				
Radio waves (Higher)				
EM waves & their uses				
More uses of EM waves				
Investigating infrared radiation				
Dangers of electromagnetic waves				
Magnetism & electromagnetism				
Permanent & induced magnets				
Electromagnetism				
The motor effect (Higher)				
Electric motors (Higher)				