This guide is for students, parents and carers. It outlines: Information about the GCSE course; the topics on each examination paper and where students can find revision resources; and ends with examination tips specific to this subject.

**Course Title and Exam Board**

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| Exam board | AQA | |
| Course title | Combined Science Trilogy | |
| Course structure and assessment | 6 X 1 Hour 15 Minute Examinations | |
| Key dates | Biology paper 1 | 14 May 2019 (pm exam) |
| Biology paper 2 | 07 June 2019 (pm exam) |
| Chemistry paper 1 | 16 May 2019 (am exam) |
| Chemistry paper 2 | 12 June 2019 (am exam) |
| Physics paper 1 | 22 May 2019 (pm exam) |
| Physics paper 2 | 14 June 2019 (am exam) |

**GCSE Examinations**

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| Paper | Marks | Duration | Weighting | Topics on this paper |
| Biology paper 1 | 70 | 75 mins | 17.5% | Cell Biology, Organisation, Infection and Response, Bioenergetics |
| Biology paper 2 | 70 | 75 mins | 17.5% | Homoeostasis and Response, Inheritance, Variation and Evolution, Ecology |
| Chemistry paper 1 | 70 | 75 mins | 17.5% | Atomic structure and the Periodic Table, Bonding, Structure and Properties of Matter, Quantitative Chemistry, Chemical Changes, Energy Changes |
| Chemistry paper 2 | 70 | 75 mins | 17.5% | The Rate and Extent of Chemical Change, Organic Chemistry, Chemical Analysis, Chemistry of the Atmosphere, Using Resources |
| Physics paper 1 | 70 | 75 mins | 17.5% | Energy, Electricity, Particle Model of Matter, Atomic Structure |
| Physics paper 2 | 70 | 75 mins | 17.5% | Forces, Waves, Magnetism and Electromagnetism |

**Link to the syllabus:**

[**https://filestore.aqa.org.uk/resources/science/specifications/AQA-8464-SP-2016.PDF**](https://filestore.aqa.org.uk/resources/science/specifications/AQA-8464-SP-2016.PDF)

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| **Revision topics** | **Material covered** | **Revised? Y/N** |
| **Biology Paper 1** | | |
|
| **Cell structure and transport** | **the world of the microscope** |  |
| **animal and plant cells** |  |
| **eukaryotic and prokaryotic cells** |  |
| **specialisation in animal cells** |  |
| **specialisation in plant cells** |  |
| **diffusion** |  |
| **osmosis** |  |
| **osmosis in plants** |  |
| **active transport** |  |
| **exchanging materials** |  |
| **Cell division** | **cell division** |  |
| **growth and differentiation** |  |
| **stem cells** |  |
| **stem cell dilemmas** |  |
| **Organization and the digestive system** | **tissues and organs** |  |
| **the human digestive system** |  |
| **the chemistry of food** |  |
| **catalysts and enzymes** |  |
| **factors affecting enzyme action** |  |
| **how the digestive system works** |  |
| **making digestion efficient** |  |
| **Organising animals and plants** | **the blood** |  |
| **blood vessels** |  |
| **the heart** |  |
| **helping the heart** |  |
| **breathing and gas exchange** |  |
| **tissues and organs in plants** |  |
| **transport systems in plants** |  |
| **evaporation and transpiration** |  |
| **factors affecting transpiration** |  |
| **Communicable diseases** | **health and disease** |  |
| **pathogens and disease** |  |
| **preventing infections** |  |
| **viral diseases** |  |
| **bacterial diseases** |  |
| **diseases caused by fungi and protists** |  |
| **human defence responses** |  |
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| **Preventing and treating disease** | **vaccination** |  |
| **antibiotics and painkillers** |  |
| **discovering drugs** |  |
| **developing drugs** |  |
| **Non-communicable diseases** | **Non-communicable diseases** |  |
| **Cancer** |  |
| **Smoking and the risk of disease** |  |
| **Diet, exercise and disease** |  |
| **Alcohol and other carcinogens** |  |
| **Photosynthesis** | **Photosynthesis** |  |
| **The rate of photosynthesis** |  |
| **How plants use glucose** |  |
| **Making the most of photosynthesis** |  |
| **Respiration** | **Aerobic respiration** |  |
| **The response to exercise** |  |
| **Anaerobic respiration** |  |
| **Metabolism and the liver** |  |
| **Biology paper 2** | | |
| **Human nervous system** | **Principles of homeostasis** |  |
| **The structure and function of the nervous system** |  |
| **Reflex actions** |  |
| **Hormonal coordination** | **Principles of hormonal control** |  |
| **The control of blood glucose levels** |  |
| **Treating diabetes** |  |
| **The role of negative feedback** |  |
| **Human Reproduction** |  |
| **Hormones and the menstrual cycle** |  |
| **The artificial control of fertility** |  |
| **Reproduction** | **Types of reproduction** |  |
| **Cell division in sexual reproduction** |  |
| **DNA and the genome** |  |
| **Inheritance in action** |  |
| **More about genetics** |  |
| **Inherited disorders** |  |
| **Screening for genetic disorders** |  |
| **Variation and evolution** | **Variation** |  |
| **Evolution by natural selection** |  |
| **Selective breeding** |  |
| **Genetic engineering** |  |
| **Ethics of genetic technologies** |  |
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| **Genetics and evolution** | **Evidence for evolution** |  |
| **Fossils and extinction** |  |
| **More about extinction** |  |
| **Antibiotic resistant bacteria** |  |
| **Classification** |  |
| **New systems of classification** |  |
| **Adaptations, interdependence and competition** | **The importance of communities** |  |
| **Organisms in their environment** |  |
| **Distribution and abundance** |  |
| **Competition in animals** |  |
| **Competition in plants** |  |
| **Adapt and survive** |  |
| **Adaptation in animals** |  |
| **Adaptations in plants** |  |
| **Organising an ecosystem** | **Feeding relationships** |  |
| **Materials cycling** |  |
| **The carbon cycle** |  |
| **Biodiversity and ecosystems** | **The human population explosion** |  |
| **Land and water pollution** |  |
| **Air pollution** |  |
| **Deforestation and peat destruction** |  |
| **Global warming** |  |
| **Maintaining biodiversity** |  |
| **Chemistry Paper 1** | | |
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| **C1 Atomic Structure** | **Atoms, Chemical equations, Separating mixtures, Fractional distillation and chromatography, History and structure of the atom, Electronic structures and isotopes.** |  |
| **C2 The Periodic Table** | **Development and electronic structure  of the periodic table, Group1 , Group 7,Trends in reactivity.** |  |
| **C3 Structure and bonding** | **States of matter, Atoms to ions, Ionic bonding, Giant ionic structures, Covalent bonding, Simple covalent, Giant covalent, Fullerenes and Graphene, bonding in metals, Giant metallic structures.** |  |
| **C4 Chemical calculations** | **Relative masses and moles, Moles from masses (H),Equations, Masses and balanced equations (H),Concentrations,** |  |
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| **C5 Chemical Changes** | **Reactivity series, Displacement reactions, Extracting metals, Salts from metals, Salts from insoluble bases, Making more salt, Neutralisation and pH scale, Strong and weak acids (H)** |  |
| **C6 Electrolysis** | **Intro to electrolysis, Changes at the electrodes, Extraction of aluminium, Aqueous solutions.** |  |
| **C7 Energy changes** | **Exo and endothermic reactions, Energy transfers, reaction profiles, Bond energy calculations(H)** |  |
| **Chemistry Paper 2** | | |
| **C8 Rates and equilibrium** | **Rates of reaction, Collision theory and surface area, The effect of temperature, The effect of concentration and pressure, The effect of catalysts, Reversible reactions, Energy and reversible reactions, Dynamic equilibrium, Altering conditions (H).** |  |
| **C9 Crude Oil and fuels** | **Hydrocarbons, Fractional distillation of oil, Burning hydrocarbon fuels, Cracking hydrocarbons.** |  |
| **C12 Chemical analysis** | **Pure substances and mixtures, Analysing chromatograms, Testing for gases.** |  |
| **C13 The Earth’s atmosphere** | **History of our atmosphere, Our evolving atmosphere, Greenhouse gases, Global climate change, Atmospheric pollutants.** |  |
| **C14 The Earth’s resources** | **Finite and renewable resources, Water safe to drink, Treating waste water, Extracting metals from ores (H), Life cycle assessments, Reduce Reuse Recycle.** |  |
| **Physics Paper 1** | | |
| **Conservation and dissipation of energy** | **Changes in energy stores** |  |
| **Conservation of energy** |  |
| **Energy and work** |  |
| **Gravitational potential energy stores** |  |
| **Kinetic energy and elastic energy stores** |  |
| **Energy dissipation** |  |
| **Energy and efficiency** |  |
| **Electrical appliances** |  |
| **Energy and power** |  |
| **Energy transfer by heating** | **Energy transfer by conduction** |  |
| **Specific heat capacity** |  |
| **Heating and insulating buildings** |  |
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| **Energy resources** | **Energy demands** |  |
| **Energy from wind and water** |  |
| **Power from the Sun and Earth** |  |
| **Energy and the environment** |  |
| **Big energy issues** |  |
| **Electric circuits** | **Current and charge** |  |
| **Potential difference and resistance** |  |
| **Component characteristics** |  |
| **Series circuits** |  |
| **Parallel circuits** |  |
| **Electricity in the home** | **Alternating current** |  |
| **Cables and plugs** |  |
| **Electrical power and potential difference** |  |
| **Electrical currents and energy transfer** |  |
| **Appliances and efficiency** |  |
| **Molecules and matter** | **Density** |  |
| **States of matter** |  |
| **Changes of state** |  |
| **Internal energy** |  |
| **Specific latent heat** |  |
| **Gas pressure and temperature** |  |
| **Radioactivity** | **Atoms and radiation** |  |
| **The discovery of the nucleus** |  |
| **Changes in the nucleus** |  |
| **More about alpha, beta, and gamma radiation** |  |
| **Activity and half-life** |  |
| **Physics Paper 2** | | |
|
| **Forces in balance** | **Vectors and scalars** |  |
| **Forces between objects** |  |
| **Resultant forces** |  |
| **Centre of mass** |  |
| **The parallelogram of forces** |  |
| **Resolution of forces** |  |
| **Motion** | **Speed and distance-time graphs** |  |
| **Velocity and acceleration** |  |
| **More about velocity-time graphs** |  |
| **Analysing motion graphs** |  |
| **Force and motion** | **Force and acceleration** |  |
| **Weight and terminal velocity** |  |
| **Forces and braking** |  |
| **Momentum** |  |
| **Forces and elasticity** |  |
| **Wave properties** | **The nature of waves** |  |
| **The properties of waves** |  |
| **Reflection and refraction** |  |
| **More about waves** |  |
| **Electromagnetic waves** | **The electromagnetic spectrum** |  |
| **Light, infrared, microwaves, and radiowaves** |  |
| **Communications** |  |
| **Ultraviolet waves, x-rays, and gamma rays** |  |
| **X-rays in medicine** |  |
| **Electromagnetism** | **Magnetic fields** |  |
| **Magnetic fields of electric currents** |  |
| **The motor effect** |  |

**Required Practicals:** These experiments will be used as a context for examining practical skills.

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|  | **Required Practical** | **Unit taught in** |
| 1 | Microscopes | Biology Paper 1 |
| 2 | Osmosis | Biology Paper 1 |
| 3 | Enzymes | Biology Paper 1 |
| 4 | Food Tests | Biology Paper 1 |
| 5 | Photosynthesis | Biology Paper 1 |
| 6 | Reaction Time | Biology paper 2 |
| 7 | Field Investigations | Biology Paper 2 |
| 8 | Making Salts | Chemistry Paper 1 |
| 9 | Electrolysis | Chemistry Paper 1 |
| 10 | Temperature Changes | Chemistry Paper 1 |
| 11 | Rates of Reaction | Chemistry Paper 2 |
| 12 | Chromatography | Chemistry Paper 2 |
| 13 | Water Purification | Chemistry Paper 2 |
| 14 | Specific Heat Capacity | Physics Paper 1 |
| 15 | Resistance | Physics Paper 1 |
| 16 | I-V Characteristics | Physics Paper 1 |
| 17 | Density | Physics Paper 1 |
| 18 | Force and Extension | Physics Paper 2 |
| 19 | Acceleration | Physics Paper 2 |
| 20 | Waves | Physics Paper 2 |
| 21 | Radiation and Absorption | Physics Paper 2 |