

# COMBINED SCIENCE TRILOGY

## Our Curriculum Aims:

In Years 9,10 & 11 students study topics from the AQA GCSE Combined Science Trilogy course which is examined at the end of Year 11. AGSB Science Students will gain lifelong skills, including:

- A strong science comprehension and confidence in a technological world, with an informed interest in scientific matters
- An understanding of how scientific theories and methods have developed, and continue to develop, as a result of groups and individuals working together
- An understanding that the study and practice of science are affected and limited by social, economic, technological, ethical and cultural factors
- An awareness that the application of science in everyday life may be both helpful and harmful to the individual, the community and the environment and to make informed decisions on scientific issues as a consequence
- Knowledge that science overcomes national boundaries and that the language of science, used correctly and thoroughly, is universal
- An understanding of the usefulness (and limitations) of scientific method, and its application in other subjects and in everyday life
- A concern for accuracy and precision
- An understanding of the importance of safe practice and excellent scientific practical skills
- Improved awareness of the importance of objectivity, integrity, enquiry, initiative and inventiveness
- An interest in, and care for, the environment
- An excellent foundation for advanced study in pure or applied science at A level and beyond or in science-dependent vocational courses.

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**GCSE Course Followed: Combined Science Trilogy**

**Specification: AQA ([Syllabus code 8464](#))**

## Why Choose GCSE

Students will continue to study Biology, Chemistry and Physics separately. They will be awarded two linked grades, e.g. 7-7, 7-8, 8-8 etc to reflect that their achievement is worth 2 full GCSEs. Students will study all 3 sciences in 10 periods per fortnight.

**Which option to choose?**

Students who are intending to study sciences at A level may prefer to choose the separate Science option as they will have studied more science and in greater

depth. However, studying the Combined Science Trilogy does not prevent the student studying science at A level. The combined science syllabus covers exactly two thirds of the content of the separate science syllabus and is examined to exactly the same standard of difficulty. Studying Combined Science will benefit students who would like to study a broader range of subjects at GCSE and are unsure of their study choices post 16. The work required during A level studies, by year 12 students, to cover the content not studied by combined science students has not proven prohibitive in previous years.

## **Summary of Subject Content (All students cover all of this content)**

### **Biology (AQA Exam board)**

#### **All students will study:**

- Cell Biology
- Organisation
- Infection and Response
- Bioenergetics
- Homeostasis and Response
- Inheritance, Variation and Evolution
- Ecology

### **Chemistry (AQA Exam board)**

- Atomic Structure and 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

### **GCSE (AQA Exam board)**

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

Students will be taught practical skills that may feature as questions on the final exam papers in each of the three sciences.

## **Key Stage Four Curriculum Overview Year 9**

		<b>Key Content of the Topic</b>			<b>Assessment points</b>
		<b>Biology</b>	<b>Chemistry</b>	<b>Physics</b>	Throughout the GCSE course there will be a series of class based end of topic tests to assess pupil understanding and progress – roughly one test per subject per half term.
<b>HT 1</b>		Photosynthesis and Respiration	Fundamentals Acids	Electricity circuit electricity	
<b>HT 2</b>		Animal and Plant Cells Microscopy Eukaryotes and Prokaryotes Cell specialisation Cell differentiation	More Acids Develop formulae work	series and parallel circuits	
<b>HT 3</b>		Diffusion Osmosis Active Transport	Start Gcse Content Unit 1 GCSE Fundamentals	Energy transfers	
<b>HT 4</b>		Principles of organisation	Periodic Table trends	domestic electricity	
<b>HT 5</b>		Plant tissues Plant Organ Systems	Periodic table Atmosphere	Electric fields and static electricity	Trial Exam
<b>HT 6</b>		Adaptation s Communities	Atmosphere	Heat transfer; conduction,	

				convection and radiation.	
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## Year 10

		<b>Key Content of the Topic</b>			<b>Assessment points</b>
		<b>Biology</b>	<b>Chemistry</b>	<b>Physics</b>	Throughout the GCSE course there will be a series of class based end of topic tests to assess pupil understanding and progress – roughly one test per subject per half term.
<b>HT 1</b>		Abiotic factors Biotic factors Levels of organisation Animal tissues, organs and organ systems	Ionic bonding Electrolysis Covalent Bonding	Energy  work done and energy transfer  Forces and elasticity  KE, PE and energy changes in a system	
<b>HT 2</b>		The heart and blood vessels Blood Coronary Heart disease Health issues Effect of lifestyle Cancer	Covalent Bonding Metals	Particle model of matter  changes of state and particle model (kinematic model)  specific and latent heat  energy changes in a system	

				Work, energy, power and efficiency National grid	
<b>HT 3</b>	Communicable diseases Viral diseases Bacterial diseases Fungal diseases Protist diseases Resistant bacteria Classification of living organisms How materials are cycled	Metals Energy Changes in Reactions Water Life Cycle Assessments		Forces and Motion forces and their interactions Forces and motion (graphs and equations of motion) Radioactive contamination	Year 10 Mock Exam in March / April prior to half term. One exam per science covering all GCSE content studied to date (i.e. year 9 and 10 content)
<b>HT 4</b>	Culturing microorganisms Human defence systems Vaccination Antibiotics and painkillers Discovery and development of drugs	Energy Changes Y10 exam prep		momentum Factors affecting braking distance / road safety	
<b>HT 5</b>	Bioenergetics Photosynthesis Rate of photosynthesis Uses of glucose Aerobic and anaerobic respiration Response to exercise Metabolism	Carbon Chemistry		Waves Wave types and properties Electromagnetic spectrum – properties, uses and hazards	
<b>HT 6</b>	Cell Division Nervous system Human endocrine system	Carbon Chemistry		Wave calculations	

	Control of blood glucose			
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## Year 11

	<b>Key Content of the Topic</b>			<b>Assessment points</b>
	<b>Biology</b>	<b>Chemistry</b>	<b>Physics</b>	
<b>HT 1</b>	Hormones in Human reproduction Contraception Use of hormones to treat infertility Negative feedback	Chemical Calculations	Magnetism and electromagnetism	Throughout the GCSE course there will be a series of class based end of topic tests to assess pupil understanding and progress – roughly one test per subject per half term.
<b>HT 2</b>	Sexual and asexual reproduction Meiosis DNA and the Genome Genetic inheritance Inherited disorders	Chemical calculations	Motors and generators	Year 11 Mock exam in last 2 weeks before Christmas. One exam per science covering all material from GCSE course to date (year 9, 10 and 11 content)
<b>HT 3</b>	Sex determination Variation Evolution Selective breeding Genetic engineering	Chemical calculations Y11 mock	Atomic structure / nuclear physics  Isotopes ad decay equations	
<b>HT 4</b>	Evidence for evolution Fossils Extinction Resistant bacteria	Acids Rate of reaction Equilibrium	Half life Radioactive contamination	

		Classification of living organisms How materials are cycled	Water Life Cycle Assessments		
<b>HT 5</b>		Biodiversity Waste management Land use Deforestation Global Warming Maintaining Biodiversity	Finish off Revision	Revision, exam technique and analysis of 12 key practicals	
<b>HT 6</b>	NA	Revision and Exam technique practice			GCSE exams

### **Recommended Revision Guides for GCSE**

Pupils have access to the online textbook through Kerboodle. There are revision materials available on Office 365. Revision guides are available from bookstores such as W.H.Smith and Waterstones. As long as it is AQA combined science GCSE specific and it is in a style that appeals to your son, then it will be suitable. Particularly recommended is the Oxford University Press Revise: AQA GCSE Combined science Revision and Practice

### **Support available for GCSE Students**

Drop in sessions are available if students need to seek advice or support. Students should ask their teachers about these sessions