



## A Guide to the Curriculum at Key Stage 4 (Years 10 & 11)

### GCSE Science

This qualification is linear, meaning that students will sit all their exams at the end of the course. The course specification can be found at

<http://www.aqa.org.uk/subjects/science/gcse/combined-science-trilogy-8464>

#### Assessments

There are six papers: two biology, two chemistry and two physics. Each of the papers will assess knowledge and understanding from distinct topic areas.

Each paper has a maximum mark of 70 and will contribute 16.5% towards the final grade. The papers are 1 hour 15 minutes long and students can be entered for Foundation or Higher Tier. Each paper asks questions in a combination of multiple choice, structured, closed short responses and open responses.

#### Subject content

##### Biology Paper 1

Cell Biology; Organisation; Infection and response; and Bioenergetics.

##### Biology Paper 2

Homeostasis and response; Inheritance, variation and evolution; and Ecology.

##### Chemistry Paper 1

Atomic structure and the periodic table; Bonding, structure, and the properties of matter; Quantitative chemistry; Chemical changes; and Energy changes.

##### Chemistry Paper 2

The rate and extent of chemical change; Organic chemistry; Chemical analysis; Chemistry of the atmosphere; and Using resources.

##### Physics Paper 1

Energy; Electricity; Particle model of matter; and Atomic structure.

##### Physics Paper 2

Forces; Waves; and Magnetism and electromagnetism

#### Grouping

There is no set format for the grouping of students. At the start of KS4, all the data is examined to determine the best arrangements for that cohort. Students are grouped by ability but this tends to be broad banding rather than rigid setting.

#### Literacy/Numeracy Skills

Both GCSE courses place high demands on literacy and numeracy skills:



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### Numeracy

Numeracy skills are developed so that students can:

- use data rather than opinion if asked to justify an explanation
- suggest reasons why a given measurement may not be the true value of the quantity being measured.
- when asked to evaluate data, make reference to its repeatability and/or reproducibility.
- calculate the mean of a set of repeated measurements
- from a set of repeated measurements of a quantity, use the mean as the best estimate of the true value
- explain why repeating measurements leads to a better estimate of the quantity.
- from a set of repeated measurements of a quantity, make a sensible suggestion about the range within which the true value (correct answer) probably lies and explain this
- identify any outliers (results that are outside the acceptable range) in a set of data
- treat an outlier as data unless there is a reason for doubting its accuracy
- discuss and defend the decision to discard or to retain an outlier.

### Literacy

Literacy skills are developed in the following areas:

- spelling, punctuation and grammar
- appropriate use of correct scientific terms
- developing a structured, persuasive argument
- selecting and using evidence to support an argument
- considering different sides of a debate in a balanced way
- logical sequencing.

Particular emphasis is placed on practising the longer (6 mark) exam questions.

### Promoting Reading for Pleasure/Independent Reading

All Science teachers recognise the link between reading for pleasure and attainment across all subjects. We are keen to promote this and seize all opportunities to link reading to the topics we deliver. Teachers are encouraged to talk about their own reading and prompt students to do the same, when appropriate.

### Support, Strategies and Interventions for students (SEN, Most Able, Students not making Expected Progress)

Extra support is offered at certain key points of the course. We will make it clear which students we expect to attend, but all are welcome. Teaching Assistants work closely with certain groups in partnership with the class teacher. Additional resources are sometimes used but teaching techniques, such as expert use of targeted questioning, are often more important because they keep all the students involved at appropriate levels.

### Useful Resources for Home

Here is a link to exam style questions and answers:

<http://www.aqa.org.uk/subjects/science/gcse/combined-science-trilogy-8464/assessment-resources>



## A Guide to the Curriculum at Key Stage 4 (Years 10 & 11)

Revision guides are available for both courses from your child's Science teacher.

### How to help your child in Year 10 and 11

Every student is given a username and password to access the Kerboodle course we follow (including the online textbook). This means that even when they are absent, students can keep in touch with the work they have missed.

Relying on last minute preparation for six exams is always a risky strategy. We have found that the most successful students are those who start their revision preparations at the start of Year 10. We recommend that students prepare revision cards (available from Science teachers), mind maps, etc. as the course progresses. There will be exams at appropriate points during the course; this is the time to prepare those materials. Reading through exercise books is a poor short term revision strategy and very ineffective in the longer term. If you see your child revising in this way, please encourage them to prepare materials that can be used for future exams.

Please look at your child's book regularly and ensure that requests for corrections and follow-up questions from marking are addressed. If you have any concerns, please contact your child's Science teacher.

### Glossary of terms

Term	Definition
accuracy	accuracy how close a reading is to the true value
anomaly (outlier)	A value in a set of results that is judged to be inaccurate, (too high or too low to be correct)
variable	A measurement that could be changed (e.g. temperature, time, mass)
dependent variable	variable which is measured whenever there is a change in the independent variable
independent variable	variable which is deliberately changed
control variable	variables other than the independent
precision	a quality denoting the closeness of a measurement to the correct value
range (of a variable)	the maximum and minimum values in a set of data.
reproducibility	precision obtained when measurement results are produced by different laboratories (and therefore by different operators using different pieces of equipment)