

SEMTA

The Sector Skills Council for
Science, Engineering and
Manufacturing Technologies

More science

**GCSE Applied Science
and the new KS4 science curriculum**



**For
Teachers**

More science

Introduction

The National Curriculum for Science at Key Stage 4 was revised in September 2006. There is now more variation, options and opportunities in science education.

This leaflet aims to highlight what's on offer so that you can get a clearer idea of which 'science suite' from the various awarding bodies is most suitable for your students. This leaflet also shows where the GCSE Applied Science is positioned relative to the other science courses.

Science is still compulsory for all students up to the age of 16 and now there is more flexibility in terms of the content and pathways for students studying it.

Choosing a course combination

Each awarding body has its own suite of courses but in each case the outline pathways and opportunities are essentially the same. These are shown in the pathway diagram below.

There are two main choices at the start of the GCSE course: students can take GCSE Applied Science (Double Award) or they can take a single award GCSE known as 'Core Science' that can be taken with a number of possible additional science GCSEs, also as single awards.

If students take the Core Science GCSE they have a number of options available to them to broaden and enhance their study of science. Each of these options is worth a single GCSE.

Additional Science broadens the scientific ideas and concepts covered in the Core Science whereas the Additional Applied Science course adds an extra emphasis on how science is used in the workplace. The individual

One of the most significant changes to the new curriculum has been the introduction of a section known as How Science Works, which looks at the nature of science and how scientific ideas are discovered, developed, tested and communicated. It builds on the content that was covered in the practical investigation part of the previous curriculum to considerably broaden the scope to look at the ways in which science and scientists work within society.

Physics, Chemistry and Biology courses offer the traditional scientific disciplines that have been updated for greater relevance for today's scientific needs.

The new approach of the KS4 Science updates offers students greater flexibility in what can be studied. For example, Core Science can be taken with just a single subject GCSE in Biology, Chemistry or Physics or all three. Alternatively, Core Science can be taken with Additional Science or Additional Applied Science in order to get science qualifications worth two GCSEs.

It is worth noting that some awarding bodies offer other science-based GCSE courses that could also be taken. These include geology, psychology, electronics, astronomy, environmental science, environmental and land-based science and human physiology and health. The awarding bodies will be able to offer support and guidance for these courses.

Pathway diagram for KS4 Science (2006 onwards)

Route 1 GCSE Applied Science (Double Award) (2 GCSEs)

Route 2 Core Science (1 GCSE)

- ▶ Additional Science (1 GCSE)
- ▶ Additional Applied Science (1 GCSE)
- ▶ Physics (1 GCSE)
- ▶ Chemistry (1 GCSE)
- ▶ Biology (1 GCSE)

Notes

- Edexcel does not offer either GCSE Applied Science (Double Award) or Additional Applied Science.
- GCSE Applied Science and Core Science cannot be taken together.

Awarding body science suites

Each awarding body has something slightly different to offer when it comes to new KS4 Science, whether it's the

approach to content or the method of assessment. It's worth noting how courses differ in the way they are

assessed by each awarding body to see which is the most suitable for your students.

AQA - Science A and Science B

AQA offers the GCSE Applied Science as well as two new suites known as 'Science A' and 'Science B'. The content of suites A and B are exactly the same, the only difference between them is the method of assessment. Science A and Science B features Core Science as a single GCSE which can be taken with other supplementary science GCSE courses.

AQA's GCSE Applied Science Double Award consists of 4 units. Three of these units are centre assessed from the

students' portfolio work and contribute to 65% of the final grade. The other 35% is assessed by a 90-minute examination.

Science A Core Science is assessed with six 30-minute objective tests (2 each for physics, chemistry and biology sections) worth 75% of the final award. These are expected to be taken during the course of the year. The other 25% is a centre-assessed investigative skills assignment.

Science B Core Science is assessed with three 45-minute exam papers worth

75% of the final award. The remaining 25% is a centre-assessed unit combining practical and investigative skills.

Additional Science, Physics, Chemistry and Biology are also assessed on a split of examined papers (75%) and centre-assessed units (25%). The Additional Applied Science specification has a much higher percentage of portfolio assessment reflecting the practical content of the course.

Edexcel - 360 Science

The Edexcel KS4 science suite is titled '360 Science'. It offers Core, Additional Science and the three separate science GCSE options. Whilst it does not offer any specific applied options such as Additional Applied Science or the GCSE Applied Science (Double Award) it does offer support and materials for two approaches to teaching the 360 Science suite. The content based approach takes a more traditional look at the science

covered whereas the context based approach takes a much more applied approach to focus on the applications and uses of the science covered.

The Core Science course is assessed with 6 multiple choice tests that are taken during the course which (60% of award) together with an internally assessed part of the course that includes a direct assessment of practical skills and a set of assessment activities (40%).

The additional course is also split between external (60%) and internal (40%) assessment.

The assessment model for the GCSE Biology, Chemistry and Physics specifications is not completely fixed and can vary between 30% centre assessed and 70% externally assessed models. Edexcel will be able to provide more details, guidance and support on the options available.

GCSE Science Course	Individual GCSE components available in each course (each worth a single GCSE)						Applied Science (Double Award) GCSE courses offered
	Core Science	Additional Science	Additional Applied Science	Physics	Chemistry	Biology	
AQA Science A	✓	✓	✓	✓	✓	✓	AQA ✓
AQA Science B	✓						
Edexcel 360 Science	✓	✓	✗	✓	✓	✓	Edexcel ✗
OCR 21 st Century	✓	✓	✓	✓	✓	✓	OCR ✓
OCR Gateway	✓	✓	✓	✓	✓	✓	
WJEC	✓	✓	✗	✓	✓	✓	WJEC ✓
CCEA	✗	✗	✗	✓	✓	✓	CCEA ✓

Table: KS4 Science Suite Options and GCSE Applied Science

OCR - Twenty First Century Science and Gateway Science

OCR offers GCSE Applied Science alongside two suites of courses, 'Gateway Science' and 'Twenty First Century Science'. Both of these suites offer Core Science and Additional Science as well as Physics, Chemistry and Biology.

The Additional Applied GCSE specification is only available as part of the Twenty First Century Science suite but students who have taken the Core Science as part of the Gateway Science suite are eligible to take the Additional Applied Science from the Twenty First Century Science suite without penalty of extra examination or coursework burden.

OCR's GCSE Applied Science Double Award consists of 3 units. Two units are centre assessed from portfolio work and

contribute to two thirds of the final mark. The remaining third is assessed by a 60-minute examination.

All of the Gateway Science suite specifications (Core Science, Additional Science, Physics, Chemistry and Biology) are assessed with 2 examination papers that are worth 66% of total marks and a centre-based skills assessment accounting for the remaining 33% of marks. The skills assessment for Core Science, Physics, Chemistry and Biology is based on a set of practical tasks as well as work based on science in the news.

Twenty First Century Science is assessed in the following ways. Core Science and Additional Science are assessed with 4 examination papers (40 to 45 minutes

long) worth 66% of the total marks. Three are based on subject content and one is based on scientific ideas in context. The remaining 33% is assessed with a practical data analysis and case study.

Additional Applied Science is assessed with 3 examination papers (45 minutes) worth 50% of the marks available. The remaining 50% is assessed with a portfolio of work produce by the student.

Physics, Chemistry and Biology feature 3 examination papers (40 to 60 minutes long) that are worth 66% of the marks. Two of these are based on subject content and one on ideas in context. The remaining 33% is assessed with a practical data analysis and case study or a practical investigation.

WJEC

WJEC offers GCSE Applied Science as well as a new suite that contains specifications for Core Science, Additional Science as well as Physics, Chemistry and Biology. WJEC does not have a name for its suite of KS4 Science specification.

WJEC's GCSE Applied Science Double Award is made up of 3 units. Two of these units are centre assessed from

the students portfolio work and contribute to 66% of the final grade. The 33% is assessed by a 75-minute examination. Additional Applied Science is not offered by WJEC.

The new suite is assessed in the following way.

Core and Additional Science: 3 examination papers (40 to 45 minutes

long) worth 75% of the total marks. The remaining 25% is assessed internally, based on practical work carried out by the students.

Physics, Chemistry and Biology: 3 examination papers worth 75% of the marks available. The remaining 25% can be assessed either on the students' practical work or a written Investigatory Planning Exercise.

CCEA

The GCSE science courses in Northern Ireland have changed from 2006 but CCEA offers a slightly different range of GCSE courses.

GCSE Applied Science Double Award is

comprised of 3 units. Two portfolio based units and one examination based unit each worth 33% of the final mark.

CCEA offers Physics, Chemistry and Biology GCSEs to cover each subject in

more detail. It does not currently offer Core Science, Additional Science or Additional Applied Science. However, it still offers GCSE Science as a Double and Single Award.

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