Helping to create the scientists of the future ...

GCSE Sciences for September 2006 Start

The suite of AQA GCSE Science qualifications for teaching from 2006 offers:

- Choice and flexibility of structures and awards
- Modern courses that will stimulate students' interest in "How Science Works"
- Ease of classroom delivery
- Straightforward assessment of practical and investigative skills
- Comprehensive print and electronic resources, through AQA's partnership with Nelson Thornes

... and increasing scientific understanding for all

Helping to create the scientists of the future ...

- *Why is Key Stage 4 Science changing?*

- From September 2006 all centres offering GCSE Science have to deliver the KS4 Programme of Study in line with revised QCA criteria, with a greater emphasis on the processes and implications of scientific enquiry (How Science Works).

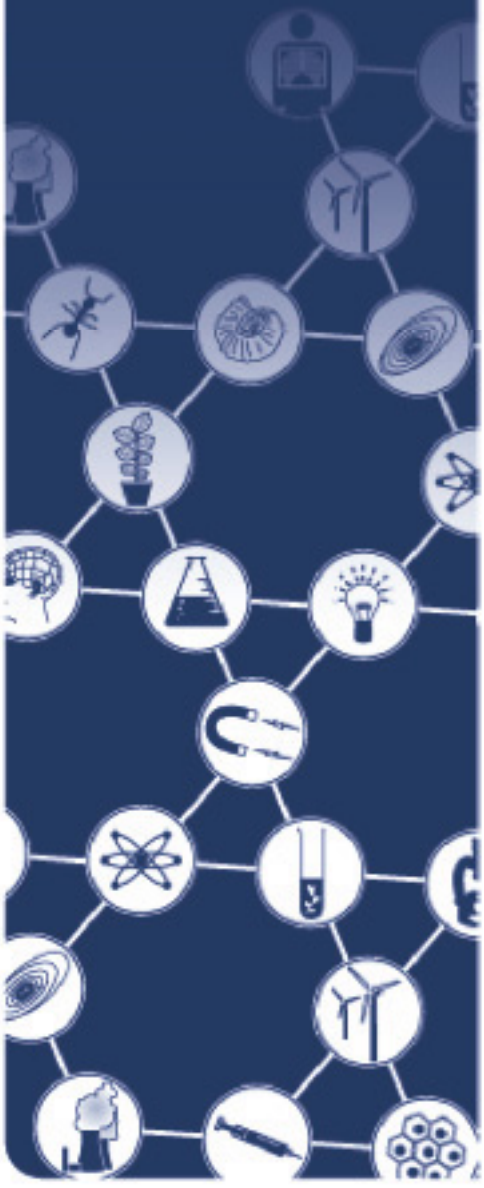
- *What is AQA offering?*

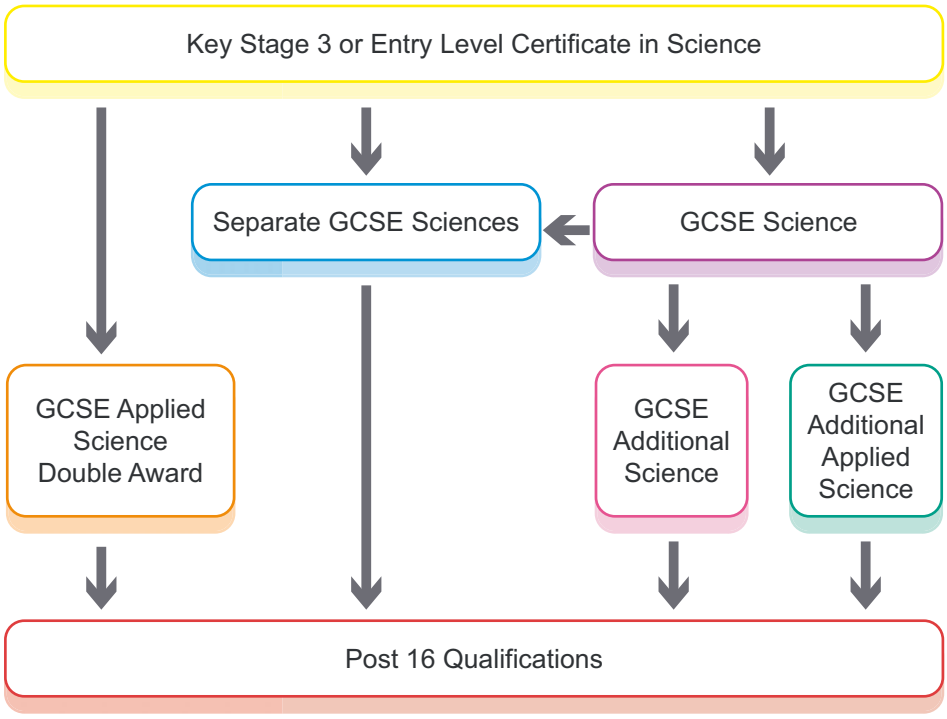
- AQA has developed a new suite of science specifications that meets the needs of all types of students. The suite comprises GCSE Science, GCSE Additional Science, GCSE Additional Applied Science, GCSE Biology, Chemistry, Physics and a double award in GCSE Applied Science. In addition, a revised Entry Level Certificate in Science is available.

- *How is AQA supporting the new qualifications?*

- A full package for teachers will be available including Teachers' Guides, support meetings and materials, standardising meetings and subject specialist Centre-Assessment Advisers. In addition, AQA has gone into partnership with Nelson Thornes, who will be producing printed and electronic resources to directly match AQA's new specifications (*see back page*).

- *The qualification pathway*





... and increasing scientific understanding for all

GCSE Science

- A single GCSE qualification, the basic building block
- Covers all of the Key Stage 4 Programme of Study
- Highlights the scientific process and the implications of Science for society
- Specifications written in an enquiring style
- Provides a firm foundation for further learning in science
- Two different types of external assessment for added flexibility
  - Science A
  - Science B
- Includes a straightforward centre-assessed unit (25%)

The teaching units

Biology 1 [B1]

- How do human bodies respond to changes inside them and to their environment?
- What can we do to keep our bodies healthy?
- How do we use/abuse medical and recreational drugs?
- What causes infectious disease and how can our bodies defend themselves against them?
- What determines where particular species live and how many of them there are?
- Why are individuals of the same species different from each other?
- What new methods do we have for producing plants and animals with the characteristics we prefer?

Chemistry 1 [C1]

- How do rocks provide building materials?
- How do rocks provide metals and how are metals used?
- How do we get fuels from crude oil?
- How are polymers and ethanol made from oil?
- How can plant oils be used?
- What are the changes in the Earth and its atmosphere?
- Why have some species of plants and animals died out?
- How do new species of plants and animals develop?
- How do humans affect the environment?

Physics 1 [P1]

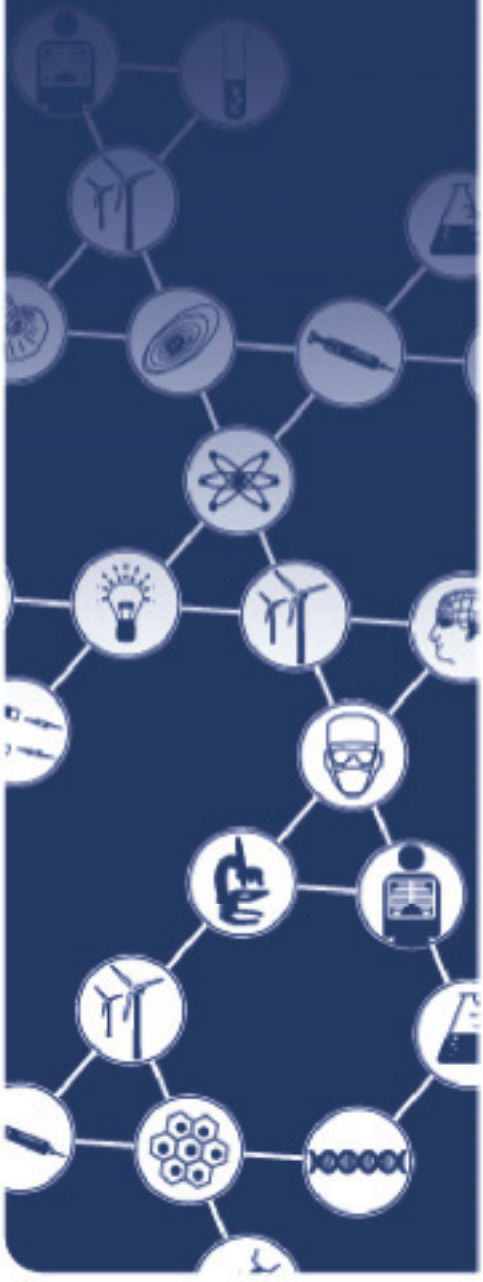
- How is heat (thermal energy) transferred and what factors affect the rate at which heat is transferred?
- What is meant by the efficient use of energy?
- Why are electrical devices so useful?
- How should we generate the electricity we need?
- What are the uses and hazards of the waves that form the electromagnetic spectrum?
- What are the uses and dangers of emissions from radioactive substances?
- What do we know about the universe and how it continues to change?

Assessment

- **GCSE Science A** has six half-size teaching units and six 30 minute objective tests (tiered), available **November**, **March** and **June**
- **GCSE Science B** – three 45 minute papers (tiered) containing structured questions, available **January** and **June** [B1+C1+P1]
- The Science 1 centre-assessed unit

GCSE Additional Science

- A single GCSE qualification
- Builds on the knowledge and skills learnt in GCSE Science
- In combination with GCSE Science provides a balanced science curriculum
- Ensures appropriate knowledge and skills for a seamless progression to 'AS' science subjects
- Highlights explaining, theorising and modelling in science
- Includes a straightforward centre-assessed unit (25%)



The teaching units

Biology 2 [B2]

- What are animals and plants built from?
- How do dissolved substances get into and out of cells?
- How do plants obtain the food they need to live and grow?
- What happens to energy and biomass at each stage in a food chain?
- What happens to the waste material produced by plants and animals?
- What are enzymes and what are some of their functions?
- How do our bodies keep internal conditions constant?
- Which human characteristics show a simple pattern of inheritance?

Chemistry 2 [C2]

- How do sub-atomic particles help us to understand the structure of substances?
- How do structures influence the properties and uses of substances?
- How much can we make and how much do we need to use?
- How can we control the rates of chemical reactions?
- Do chemical reactions always release energy?
- How can we use ions in solutions?

Physics 2 [P2]

- How can we describe the way things move?
- How do we make things speed up or slow down?
- What happens to the movement energy when things speed up or slow down?
- What is momentum?
- What is static electricity, how can it be used and what is the connection between static electricity and electric currents?
- What does the current through an electrical circuit depend on?
- What is mains electricity and how can it be used safely?
- Why do we need to know the power of electrical appliances?
- What happens to radioactive substances when they decay?
- What are nuclear fission and nuclear fusion?

Assessment

- **GCSE Additional Science** three 45 minute papers (tiered) containing structured questions, available **January** and **June** [B2+C2+P2]
- The Science 2 centre-assessed unit

GCSE Separate Sciences

- Allows students to pursue an interest in an individual science
- Offers continuity with the previous AQA specifications

Biology

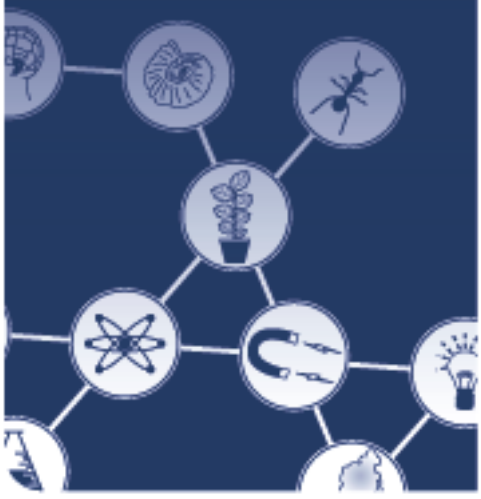
- B3 is delivered in addition to B1 and B2
- B1+B2+B3 gives a single GCSE in Biology
- Includes 75% external assessment
- Includes a straightforward centre-assessed unit (25%)

Chemistry

- C3 is delivered in addition to C1 and C2
- C1+C2+C3 gives a single GCSE in Chemistry
- Includes 75% external assessment
- Includes a straightforward centre-assessed unit (25%)

Physics

- P3 is delivered in addition to P1 and P2
- P1+P2+P3 gives a single GCSE in Physics
- Includes 75% external assessment
- Includes a straightforward centre-assessed unit (25%)



The teaching units

Biology 3 [B3]

- How do dissolved substances get into and out of animals and plants?
- How are dissolved materials transported around the body?
- How does exercise affect the exchanges taking place within the body?
- How do exchanges in the kidney help us to maintain the internal environment in mammals and how has biology helped us to treat kidney disease?
- How are microorganisms used to make food and drink?
- What other useful substances can we make using microorganisms?
- How can we be sure we are using microorganisms safely?

Chemistry 3 [C3]

- How was the periodic table developed and how can it help us understand the reactions of elements?
- What are strong and weak acids and alkalis?
- How can we find the amounts of acids and alkalis in solutions?
- What is in the water we drink?
- How much energy is involved in chemical reactions?
- How do we identify and analyse substances?

Physics 3 [P3]

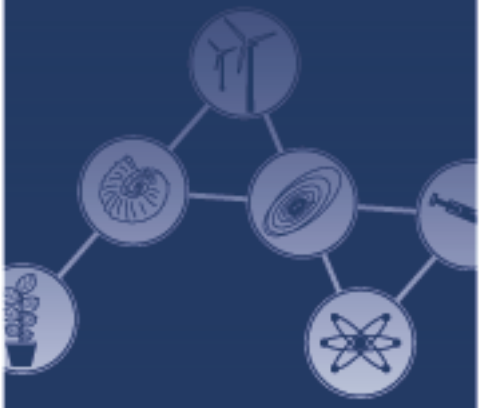
- How do forces have a turning effect?
- What keeps bodies moving in a circle?
- What provides the centripetal force for planets and satellites?
- What do mirrors and lenses do to light?
- What is sound?
- What is ultrasound and how can it be used?
- How can electricity be used to make things move?
- How do generators work?
- How do transformers work?
- What is the life history of stars?

Assessment

- Each separate science qualification has:
- three 45 minute papers (tiered) containing structured questions, available **January** and **June** e.g. Biology [B1+B2+B3]
- A centre-assessed unit

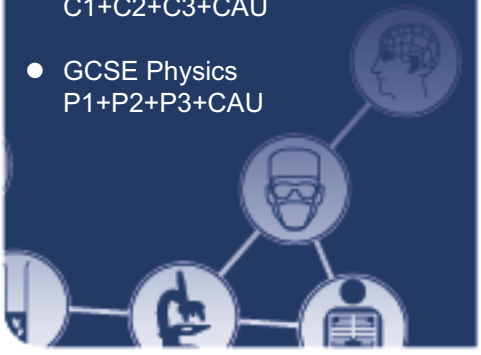
The Assessment of Practical and Investigative Skills

- Straightforward centre assessment
- Easily operated in a laboratory environment
- Easily assessed
- One centre-assessed unit for each single GCSE qualification
- Worth 25% of the overall qualification



Unit Combinations

- Flexible unit combinations
- GCSE Science B1+C1+P1+CAU
- GCSE Additional Science B2+C2+P2+CAU
- GCSE Biology B1+B2+B3+CAU
- GCSE Chemistry C1+C2+C3+CAU
- GCSE Physics P1+P2+P3+CAU



The centre-assessed units (CAUs)

*GCSE Science, GCSE Additional Science and the separate sciences all have a common type of centre-assessed unit.

The assessment has two parts:

1. **The practical skills assessment (PSA)** assesses the student's ability to work in an organised and safe manner whilst working practically in the laboratory. It can be **carried out at any time during the course**.

2. **The investigative skills assignment (ISA)** assesses the student's ability to undertake a task and collect, process and evaluate data. The ISA can be **carried out at any time during the course**.
   - Students carry out a practical task set by AQA, under normal laboratory conditions they then take a written test under controlled conditions. The test asks questions concerning the data collected during the practical task as well as that provided as part of the test.
   - The test is marked by the teacher using detailed marking guidance from AQA.

*Each single GCSE qualification has one centre assessed unit.

	UNITS			
GCSE SCIENCE	B1	C1	P1	CAU
GCSE ADDITIONAL SCIENCE	B2	C2	P2	CAU
	B3	C3	P3	
	CAU	CAU	CAU	

GCSE SEPARATE SCIENCES

BIO CHEM PHYS

AQA GCSE Applied Sciences

The 2006 GCSE Science suite also includes two Applied Science qualifications:
GCSE Additional Applied Science
GCSE Applied Science (Double Award)

GCSE Additional Applied Science

- Designed as an alternative to GCSE Additional Science
- Builds on and uses the knowledge and skills acquired in GCSE Science
- Provides a qualification with enhanced vocational relevance
- Develops practical techniques in work-related contexts
- Concentrates on the knowledge and skills used by scientists in the workplace
- Contributes to the work-related curriculum

Assessment

- One hour tiered paper containing structured questions – 60 marks
- Two Portfolio Units

GCSE Double Award Applied Science

- A double award alternative to GCSE Science and Additional Science
- Introduces students to work-related learning
- Includes the Key Stage 4 Programme of Study
- Similar to the previous double award Applied Science
- Enhanced vocational relevance
- Suitable for students who prefer an alternative teaching and learning style
- Concentrates on the skills used by scientists in the workplace
- Provides progression to post-16 qualifications

Assessment

- 1½ hour tiered paper containing structured questions – 90 marks
- Three Portfolio Units

The teaching units

Unit 1 Science in the Workplace

- Investigating how science is used
- Working safely in science

Unit 2 Science at Work

Developed through the real world contexts of

- Food Science
- Forensic Science
- Sports Science

Unit 3 Using Scientific Skills

Practical competences developed through the real world contexts of

- Food Science
- Forensic Science
- Sports Science

Assessment

Unit 1	Science in the Workplace	20%	Portfolio Unit
Unit 2	Science at Work	40%	Examined
Unit 3	Using Scientific Skills	40%	Portfolio Unit

The teaching units

Unit 1 Science in the Workplace

- Investigating how science is used
- Working safely in science

Unit 2 Science for the Needs of Society

Developed through the applied contexts of

- Health and medicine
- Countryside and environmental management
- Transport and communication
- The home environment

Unit 3 Developing Scientific Skills

Practical skills developed through workplace contexts in

- Investigating Living Organisms
- Using Chemical Analysis Techniques
- Investigating Properties of Materials

Unit 4 Using Scientific Skills for the Benefit of Society

Using practical skills in workplace contexts to

- Monitor living organisms
- Make new products
- Investigate instruments and machines

Assessment

Unit 1	Science in the Workplace	10%	Portfolio Unit
Unit 2	Science for the Needs of Society	35%	Examined Unit
Unit 3	Developing Scientific Skills	27.5%	Portfolio Unit
Unit 4	Using Scientific Skills	27.5%	Portfolio Unit

Helping to create the scientists of the future ...

Partnership

In developing these specifications we have consulted widely with schools, colleges, the department of education at Durham University and professional organisations to produce specifications that will suit the needs of students in the future.

We will continue to work closely with centres to provide a smooth transition for the introduction of these new and exciting specifications in September 2006.

Support for centres in the coming year includes:

- A nationwide series of introductory meetings which are designed to cover:
  - The suite of GCSE specifications and awards
  - Teaching and learning strategies
  - The choice of courses most suitable for particular students
  - Particular aspects of planning the science curriculum
  - The assessment schemes involved in both internal and external assessment
  - The continuing support available from AQA.
- These meetings also enable teachers to share and further develop ideas associated with delivering the new specifications.

Ongoing support will be available from September 2006 onwards including:

- Standardising meetings for all specifications.
- INSET meetings for teachers.

Nelson Thornes

Many of the main science educational publishers are producing materials aimed directly at the new AQA specifications.

AQA is working in partnership with Nelson Thornes who are producing a range of teaching materials to support the new courses including:

- Students' Books (textbooks and revision guides)
- Teachers' Books
- Electronic resources on CD-ROM to support and focus your teaching
- Online services, eg Test & Assessment

Further information and contacts

For further information please visit the AQA Website http://www.aqa.org.uk or contact us via:

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