

F I N A L



GCSE Science

Our GCSE Science portfolio offers you 13 innovative and exciting qualifications to choose from, enabling you to select the best options for your learners.

OCR GCSE
SCIENCE

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SEE THINGS DIFFERENTLY...



SEE THINGS DIFFERENTLY...



The success
of our GCSE
Science
qualifications

Our GCSE Sciences consist of two science suites (Gateway Science and Twenty First Century Science), Environmental and Land-Based Science and Applied Science (Double Award). They've been taught in schools and colleges since 2006, and we're delighted with how teachers and learners have responded to them. It's clear our new GCSE Science courses have brought a fresh enthusiasm for science.

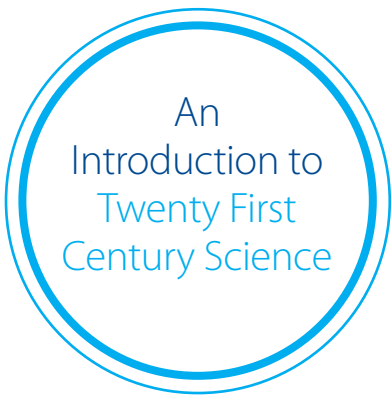
Our GCSE Sciences, launched in 2006, are an example of how we've invested time, effort and money in getting these specifications just right for you and your learners. Since then, over 1,000 centres have switched to OCR to take advantage of our science qualifications.

Since the introduction of the new GCSEs the numbers of learners studying for the separate sciences (biology, chemistry and physics) have risen substantially. In addition numbers for the A Level sciences have also increased.

Making GCSE change easier

When you start teaching our science qualifications, we will ensure that the transition is easy by:

- Guiding you through the simple process of moving to OCR for teaching science
- Keeping you fully up-to-date, with our *Focus on 14-19* magazine
- Providing a range of science support, including past papers and the Science Support Network
- Endorsing a wide range of science publisher resources, giving you more choice of support materials.



An Introduction to Twenty First Century Science

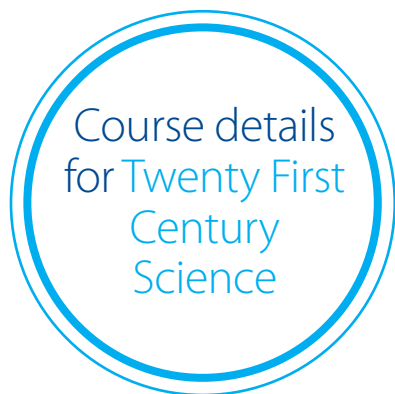
This suite of GCSEs is designed to meet a wide variety of learning needs. Each of the six GCSEs has a different focus or theme, so learners can choose which ones best suit their learning requirements and personal interests. The suite consists of:

- GCSE Biology
- GCSE Chemistry
- GCSE Physics
- GCSE Science
- GCSE Additional Science
- GCSE Additional Applied Science

Our Twenty First Century Science suite:

- Is engaging to study and it will be more motivating for you to teach.
- Will help your learners live the course rather than just studying it.
- Is an ideal foundation for better-prepared students to progress to more-advanced studies and science-related careers.
- Has specifications that were piloted successfully in schools and colleges throughout the UK. These pilots enabled us to develop the specification you want to teach.
- Has flexible assessments, which can be arranged to suit your centre, and your learners – most unit exams are available twice a year, in January and June.
- Has the option to combine Twenty First Century GCSE Additional Applied Science with GCSE Science from the Gateway Science suite or from any other awarding body, as many have done already. This flexibility lends itself to innovative and interesting curriculum combinations.
- Has a full support package that has been designed to save you preparation time and to increase your confidence in teaching and marking the science specifications. You can find out more about our support package on page 19.

Course content for this suite is based on a project devised by the University of York Science Education Group (UYSEG), as part of a QCA project on science for the 21st Century. It's supported by the Nuffield Curriculum Centre and UYSEG, with a range of resources for you and your learners published by Oxford University Press.



GCSE Biology A

GCSE Biology provides an opportunity for further developing an understanding of scientific explanations and how science works, and the study of elements of applied biology, with particular links to the work of professional scientists.

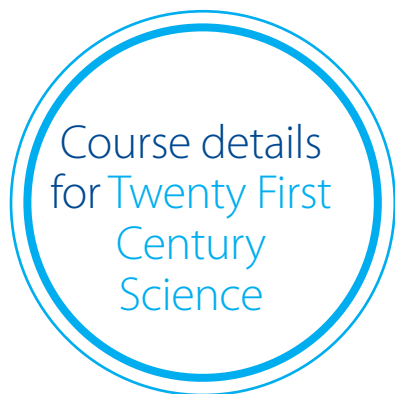
GCSE Biology provides distinctive and relevant experience for learners who wish to progress to Level 3 qualifications.

<p>B1: You and Your Genes</p> <ul style="list-style-type: none"> • What are genes and how do they affect the way that organisms develop? • Why can people look like their parents, brothers and sisters but not be identical to them? • How can and should genetic information be used? How can we use our knowledge of genes to prevent disease? • What are stem cells, and why could they be useful in treating some diseases? 	<p>B5: Growth and Development</p> <ul style="list-style-type: none"> • How does an organism produce new cells? • How do genes control growth and development within the cell? • How do new organisms develop from a single cell?
<p>B2: Keeping Healthy</p> <ul style="list-style-type: none"> • How do our bodies resist infection? • What are vaccines and how do they work? • What are antibiotics, and why can they become less effective? How are new drugs developed and tested? • What factors increase the risk of heart disease? 	<p>B6: Brain and Mind</p> <ul style="list-style-type: none"> • How do organisms respond to changes in their environment? • How is information passed through the nervous system? • What are reflex actions? • How do humans develop more complex behaviour? • What do we know about the way in which the brain co-ordinates our senses? • How do drugs affect our nervous system?
<p>B3: Life on Earth</p> <ul style="list-style-type: none"> • How did life on Earth begin and evolve? • How have scientists developed explanations of evolution? • How did humans evolve? How are our nervous systems organised? • Why do some species become extinct, and does it matter? What is the importance of biodiversity? 	<p>B7: Further Biology</p> <ul style="list-style-type: none"> • Living organisms are interdependent • Photosynthesis • Heterotrophic nutrition • New technologies • Respiration • Circulation • The skeletal system
<p>B4: Homeostasis</p> <ul style="list-style-type: none"> • What is homeostasis? • Why is homeostasis important for a cell? • How is our body temperature kept constant? • How does the body control water balance? 	

This specification comprises seven teaching modules which are assessed through four units.

Learners/candidates take Units 1, 2 and 3 and either Units 4 or 5.

Unit	Unit code	Title	Duration	Weighting	Total mark
1	A221	Biology A Unit 1 – modules B1, B2, B3	40 mins	16.7%	42
2	A222	Biology A Unit 2 – modules B4, B5, B6	40 mins	16.7%	42
3	A223	Biology A Unit 3 – Ideas in Context plus B7	60 mins	33.3%	55
4	A229	Biology A Unit 4 – Practical Data Analysis and Case Study	-	33.3%	40
5	A230	Biology A Unit 5 – Practical Investigation	-	33.3%	40



GCSE Chemistry A

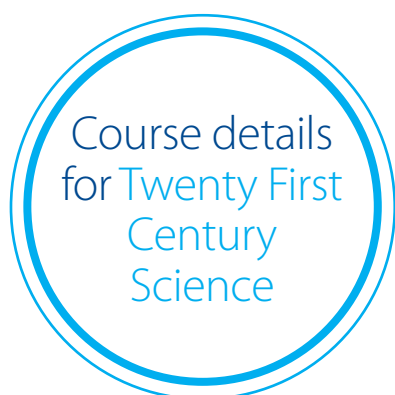
GCSE Chemistry provides an opportunity for further developing an understanding of scientific explanations and how science works, and the study of elements of applied chemistry, with particular links to the work of professional scientists.

GCSE Chemistry provides distinctive and relevant experience for learners who wish to progress to Level 3 qualifications.

<p>C1: Air Quality</p> <ul style="list-style-type: none"> Which chemicals make up air, and which ones are pollutants? How do I make sense of data about air pollution? What chemical reactions produce air pollutants? What happens to these pollutants in the atmosphere? Is air pollution harmful to me, or to my environment? What choices can we make personally, locally, nationally or globally to improve air quality? 	<p>C4: Chemical Patterns</p> <ul style="list-style-type: none"> What are the patterns in the properties of the elements? How do chemists explain the patterns in the properties of the elements? How do chemists explain the properties of compounds of group 1 and group 7 elements?
<p>C2: Material Choices</p> <ul style="list-style-type: none"> What different properties do different materials have? Why is crude oil important as a source of new materials such as plastics and fibres? Why does it help to know about the molecular structure of materials such as plastics or fibres? When buying a product, what else should we consider besides its cost and how well it does its job? How should we manage the wastes that arise from our use of materials? 	<p>C5: Chemicals of the Natural Environment</p> <ul style="list-style-type: none"> What types of chemicals make up the atmosphere and hydrosphere? What types of chemicals make up the Earth's lithosphere? Which chemicals make up the biosphere? How can we extract useful metals from minerals?
<p>C3: Food Matters</p> <ul style="list-style-type: none"> What is the difference between intensive and organic farming? Why are chemicals deliberately added to food? How can we make sure that our food does not contain chemicals that may be harmful to health? Why does what we eat affect our health? 	<p>C6: Chemical Synthesis</p> <ul style="list-style-type: none"> Chemicals - why do we need them? Planning, carrying out and controlling chemical synthesis. <p>C7: Further Chemistry</p> <ul style="list-style-type: none"> Alcohols, carboxylic acids and esters Energy changes in chemistry Reversible reactions and equilibria Analysis Green chemistry

This specification comprises seven teaching modules which are assessed through four units. Learners/candidates take Units 1, 2 and 3 **and** either Units 4 **or** 5.

Unit	Unit code	Title	Duration	Weighting	Total mark
1	A321	Chemistry A Unit 1 – modules C1, C2, C3	40 mins	16.7%	42
2	A322	Chemistry A Unit 2 – modules C4, C5, C6	40 mins	16.7%	42
3	A323	Chemistry A Unit 3 – Ideas in Context plus C7	60 mins	33.3%	55
4	A329	Chemistry A Unit 4 – Practical Data Analysis and Case Study	–	33.3%	40
5	A330	Chemistry A Unit 5 – Practical Investigation	–	33.3%	40



GCSE Physics A

GCSE Physics provides an opportunity for further developing an understanding of scientific explanations and how science works, and the study of elements of applied physics, with particular links to the work of professional scientists.

GCSE Physics provides distinctive and relevant experience for learners who wish to progress to Level 3 qualifications.

<p>P1: The Earth in the Universe</p> <ul style="list-style-type: none"> • What do we know about the Earth and space? • How have the Earth's continents moved, and with what consequences? • What is known about stars and galaxies? • How do scientists develop explanations of the Earth and space? 	<p>P5: Electric Circuits</p> <ul style="list-style-type: none"> • Electric current – a flow of what? • What determines the size of the current in an electric circuit? • How do parallel and series circuits work? • How is mains electricity produced? • How much electrical energy do we use at home?
<p>P2: Radiation and Life</p> <ul style="list-style-type: none"> • What types of electromagnetic radiation are there? What happens when radiation hits an object? • Which types of electromagnetic radiation harm living tissue and why? • How does electromagnetic radiation make life on Earth possible? • What is the evidence for global warming? Why might it be occurring and how serious a threat is it? • What ideas about risk do citizens and scientists have? 	<p>P6: The Wave Motion of Radiation</p> <ul style="list-style-type: none"> • What are waves? • Why do scientists think that light and sound are waves? • Do all types of electromagnetic radiation behave in the same way? • How is information added to a wave?
<p>P3: Radioactive Materials</p> <ul style="list-style-type: none"> • Why are some materials radioactive? • How can radioactive materials be used and handled safely, including wastes? • How should electricity be generated? What can be done with nuclear wastes? • What are the health risks from radioactive materials? 	<p>P7: Further Physics – Observing the Universe</p> <ul style="list-style-type: none"> • How do astronomers observe the sky? • How does a telescope work? • What are the objects we see in the night sky and how far away are they? • What are stars? • How do astronomers work together?
<p>P4: Explaining Motion</p> <ul style="list-style-type: none"> • How can we describe motion? • What are forces? • What is the connection between forces and motion? • How can we describe motion in terms of energy changes? 	

This specification comprises seven teaching modules which are assessed through four units.

Learners/candidates take Units 1, 2 and 3 **and** either Units 4 **or** 5.

Unit	Unit code	Title	Duration	Weighting	Total mark
1	A331	Physics A Unit 1 – modules P1, P2, P3	40 mins	16.7%	42
2	A332	Physics A Unit 2 – modules P4, P5, P6	40 mins	16.7%	42
3	A333	Physics A Unit 3 – Ideas in Context plus P7	60 mins	33.3%	55
4	A339	Physics A Unit 4 – Practical Data Analysis and Case Study	–	33.3%	40
5	A340	Physics A Unit 5 – Practical Investigation	–	33.3%	40

Course details for Twenty First Century Science

GCSE Science A

GCSE Science has an emphasis on scientific literacy - the knowledge and understanding that learners need to make sense of the science they will meet in their everyday lives.

Through a wide range of activities, learners are enabled to:

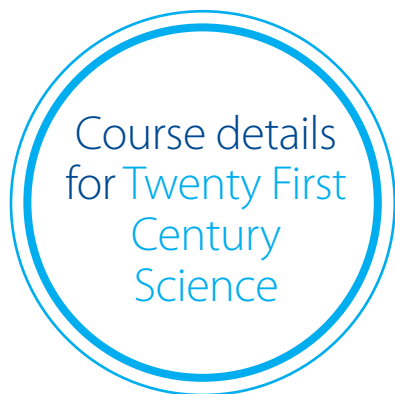
- Recognise the impact of science and technology on everyday life
- Take informed personal decisions about issues that involve science
- Understand the key points of media reports on science, and reflect on the information included in, or omitted from these reports and other sources of information.

B1: You and Your Genes B2: Keeping Healthy B3: Life on Earth	C1: Air Quality C2: Material Choices C3: Food Matters	P1: The Earth in the Universe P2: Radiation and Life P3: Radioactive Materials
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This specification comprises nine teaching modules which are assessed through five units.

Unit	Unit code	Title	Duration	Weighting	Total mark
1	A211	Science A Unit 1 – modules B1, C1, P1	40 mins	16.7%	42
2	A212	Science A Unit 2 – modules B2, C2, P2	40 mins	16.7%	42
3	A213	Science A Unit 3 – modules B3, C3, P3	40 mins	16.7%	42
4	A214	Science A Unit 4 – Ideas in Context	45 mins	16.7%	40
5	A219	Science A Unit 5 – Practical Data Analysis and Case Study Investigation	–	13.3%	16
				20%	24





GCSE Additional Science A

GCSE Additional Science is a concept-led course designed to meet the needs of learners seeking a deeper understanding of basic scientific ideas. The contexts used allow concepts to be readily related to their applications.

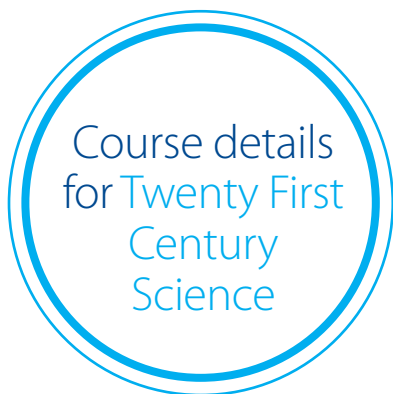
The course focuses on scientific explanations and models, and gives learners an insight into how scientists help to develop our understanding of ourselves and the world we live in.

GCSE Additional Science provides distinctive and relevant experience for learners who wish to progress to Level 3 qualifications.

B4: Homeostasis B5: Growth and Development B6: Brain and Mind	C4: Chemical Patterns C5: Chemicals of the Natural Environment C6: Chemical Synthesis	P4: Explaining Motion P5: Electric Circuits P6: The Wave Model of Radiation
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This specification comprises nine teaching modules which are assessed through five units.

Unit	Unit code	Title	Duration	Weighting	Total mark
1	A215	Additional Science A Unit 1 – modules B4, C4, P4	40 mins	16.7%	42
2	A216	Additional Science A Unit 2 – modules B5, C5, P5	40 mins	16.7%	42
3	A217	Additional Science A Unit 3 – modules B6, C6, P6	40 mins	16.7%	42
4	A218	Additional Science A Unit 4 – Ideas in Context	45 mins	16.7%	40
5	A220	Additional Science A Unit 5 – Practical Investigation	-	13.3%	16
				20%	24



GCSE Additional Applied Science A

GCSE Additional Applied Science meets the needs of learners who wish to develop their scientific understanding through authentic, work-related contexts. The contexts are likely to be encountered by many learners in their personal and/or working lives.

The course focuses on procedural and technical knowledge that underpins the work of practitioners of science and gives learners an insight into what is involved in being a practitioner of science. Activities are included which develop a range of practical competences in work-related contexts.

GCSE Additional Applied Science provides distinctive and relevant experience for learners who wish to progress to appropriate Level 3 qualifications.

<p>AP1: Life Care</p> <ul style="list-style-type: none"> • People and organisations • Baseline assessment • Diagnosis and action plans • Treatment and aftercare • Underlying skills and knowledge 	<p>AP4: Harnessing Chemicals</p> <ul style="list-style-type: none"> • Chemicals and why we need them • Making useful chemicals • Planning, controlling and costing chemical synthesis • Formulations and effectiveness • Underlying principles
<p>AP2: Agriculture and Food</p> <ul style="list-style-type: none"> • The agriculture and food industries • Growing plants for food • Animal farming for food • Biotechnology and food • Quality, value and sustainability 	<p>AP5: Communications</p> <ul style="list-style-type: none"> • The communications industry • Electrical circuits and systems • Wireless communications • Digital communications • Underlying skills and knowledge
<p>AP3: Scientific Detection</p> <ul style="list-style-type: none"> • The need for scientific evidence • Imaging • Chromatography and electrophoresis • The use of colour in analysis • General principles in evidence 	<p>AP6: Materials and Performance</p> <ul style="list-style-type: none"> • People and organisations • Mechanical behaviour of materials • Electrical, thermal and acoustic behaviour of materials • Optical behaviour of materials • Underlying skills and knowledge

Candidates take **three** units from Units 1 to 6 **and** Unit 7.

Unit	Unit code	Title	Duration	Weighting	Total mark
1	A324	AP1 Life Care	45 mins	16.7%	36
2	A334	AP2 Agriculture and Food	45 mins	16.7%	36
3	A325	AP3 Scientific Detection	45 mins	16.7%	36
4	A335	AP4 Harnessing Chemicals	45 mins	16.7%	36
5	A326	AP5 Communications	45 mins	16.7%	36
6	A336	AP6 Materials and Performance	45 mins	16.7%	36
7	A337	Additional Applied Science A – Work-related portfolio	–	50%	96

An Introduction to Gateway Science

This suite of five GCSEs focuses on explanations, theories and modelling in science, and the implications of science for society. The suite consists of:

- GCSE Biology
- GCSE Chemistry
- GCSE Physics
- GCSE Science
- GCSE Additional Science

Our Gateway Science suite gives you and your learners:

- An emphasis on getting more involved in the learning process through a variety of interesting activities and experiences, identifying links to scientific ideas and their implications for society.
- The opportunity to develop scientific explanations and theories.
- Flexible assessments, which can be carried out at the end of the course or at times during the course when learners' understanding is at its best.
- The option to combine GCSE Science from the Gateway Science suite with GCSE Additional Applied Science from the Twenty First Century Science suite.
- A full support package that has been designed to save you preparation time and to increase your confidence in teaching and marking the science specification. You can find out more about our support package on page 19.

Most unit exam papers are available twice a year, in January and June.

Both Collins and Heinemann publish resources to support you and your learners with this suite of GCSEs.





GCSE Biology B

GCSE Biology aims to give learners opportunities to:

- Develop their interest in, and enthusiasm for, biology
- Develop a critical approach to scientific evidence and methods
- Acquire and apply skills, knowledge and understanding of how science works and its essential role in society
- Acquire scientific skills, knowledge and understanding necessary for progression to further learning.

<p>B1: Understanding Ourselves</p> <ul style="list-style-type: none"> • Fit for life • What's for lunch? • Keeping healthy • Keeping in touch • Drugs and you • Staying in balance • Gene control • Who am I? 	<p>B4: It's a Green World</p> <ul style="list-style-type: none"> • Who planted that there? • Water, water everywhere • Transport in plants • Plants need minerals too • Energy flow • Farming • Decay • Recycling
<p>B2: Understanding Our Environment</p> <ul style="list-style-type: none"> • Ecology in our school grounds • Grouping organisms • The food factory • Compete or die • Adapt to fit • Survival of the fittest • Population out of control? • Sustainability 	<p>B5: The Living Body</p> <ul style="list-style-type: none"> • In good shape • The vital pump • Running repairs • Breath of life • Waste disposal • Life goes on • New for old • Size matters
<p>B3: Living and Growing</p> <ul style="list-style-type: none"> • Molecules of life • Diffusion • Keep it moving • Divide and rule • Growing up • Controlling plant growth • New genes for old • More of the same 	<p>B6: Beyond the Microscope</p> <ul style="list-style-type: none"> • Understanding bacteria • Harmful micro-organisms • Micro-organisms – factories for the future? • Biofuels • Life in soil • Microscopic life in water • Enzymes in action • Genetic engineering

This specification comprises six teaching modules which are assessed through three units. Learners/candidates take Units 1 and 2 **and** either Units 3 **or** 4.

Unit	Unit code	Title	Duration	Weighting	Total mark
1	B631	Biology B Unit 1 – modules B1, B2, B3	60 mins	33.3%	60
2	B632	Biology B Unit 2 – modules B4, B5, B6	60 mins	33.3%	60
3	B635	Biology B Unit 3 – 'Can-Do' tasks and report in 'Science in the News'	–	33.3%	60
4	B636	Biology B Unit 4 – Research Study, Data Task and Practical Skills	–	33.3%	60



Course details for Gateway Science

GCSE Chemistry B

GCSE Chemistry aims to give learners opportunities to:

- Develop their interest in, and enthusiasm for, chemistry
- Develop a critical approach to scientific evidence and methods
- Acquire and apply skills, knowledge and understanding of how science works and its essential role in society
- Acquire scientific skills, knowledge and understanding necessary for progression to further learning.

<p>C1: Carbon Chemistry</p> <ul style="list-style-type: none"> • Cooking • Food additives • Smells • Making crude oil useful • Making polymers • Designing polymers • Using carbon fuels • Energy 	<p>C4: Chemical Economics</p> <ul style="list-style-type: none"> • Acids and bases • Reacting masses • Fertilisers and crop yield • Making Ammonia – Haber process and costs • Detergents • Batch or continuous? • Nanochemistry • How pure is our water?
<p>C2: Rocks and Metals</p> <ul style="list-style-type: none"> • Paints and pigments • Construction materials • Does the Earth move? • Metals and alloys • Cars for scrap • Clean air • Faster or slower (1) • Faster or slower (2) 	<p>C5: How Much?</p> <ul style="list-style-type: none"> • Moles and empirical formulae • Electrolysis • Quantitative analysis • Titrations • Gas volumes • Equilibriums • Strong and weak acids • Ionic equations
<p>C3: The Periodic Table</p> <ul style="list-style-type: none"> • What are atoms like? • How atoms combine - ionic bonding • Covalent bonding and the structure of the periodic table • Group 1 elements • Group 7 elements • Electrolysis • Transition elements • Metal structure and properties 	<p>C6: Chemistry Out There</p> <ul style="list-style-type: none"> • Energy transfers – fuel cells • Redox reactions • Alcohols • Chemistry of sodium chloride • Depletion of the ozone layer • Hardness of water • Natural fats and oils • Analgesics

This specification comprises six teaching modules which are assessed through three units. Learners/candidates take Units 1 and 2 and either Units 3 or 4.

Unit	Unit code	Title	Duration	Weighting	Total mark
1	B641	Chemistry B Unit 1 – modules C1, C2, C3	60 mins	33.3%	60
2	B642	Chemistry B Unit 2 – modules C4, C5, C6	60 mins	33.3%	60
3	B645	Chemistry B Unit 3 – ‘Can-Do’ tasks and report in ‘Science in the News’	–	33.3%	60
4	B646	Chemistry B Unit 4 – Research Study, Data Task and Practical Skills	–	33.3%	60



GCSE Physics B

GCSE Physics aims to give learners opportunities to:

- Develop their interest in, and enthusiasm for, physics
- Develop a critical approach to scientific evidence and methods
- Acquire and apply skills, knowledge and understanding of how science works and its essential role in society
- Acquire scientific skills, knowledge and understanding necessary for progression to further learning.

<p>P1: Energy for the Home</p> <ul style="list-style-type: none"> • Heating houses • Keeping houses warm • How insulation works • Cooking with waves • Infrared signals • Wireless signals • Light • Stable Earth 	<p>P4: Radiation for Life</p> <ul style="list-style-type: none"> • Electrostatics – sparks • Electrostatics 2: use of electrostatics • Safe electricals • Ultrasound • Treatment • What is radioactivity? • Use of radioisotopes • Fission
<p>P2: Living for the Future</p> <ul style="list-style-type: none"> • Collecting energy from the Sun • Generating electricity • Fuels for power • Nuclear radiations • Our magnetic field • Exploring our Solar System • Threats to Earth • The Big Bang 	<p>P5: Space for Reflection</p> <ul style="list-style-type: none"> • Satellites, gravity and circular motion • Vectors and equations of motion • Projectile motion • Momentum • Satellite communications • The nature of waves • Refraction of waves • Optics
<p>P3: Forces for Transport</p> <ul style="list-style-type: none"> • Speed • Changing speed • Forces and motion • Work and power • Energy on the move • Crumple zones • Falling safely • The energy of games and theme rides 	<p>P6: Electricity for Gadgets</p> <ul style="list-style-type: none"> • Resisting • Sharing • Motoring • Generating • Transforming • Charging • It's logical • Even more logical

This specification comprises six teaching modules which are assessed through three units. Learners/candidates take Units 1 and 2 **and** either Units 3 **or** 4.

Unit	Unit code	Title	Duration	Weighting	Total mark
1	B651	Physics B Unit 1 – modules P1, P2, P3	60 mins	33.3%	60
2	B652	Physics B Unit 2 – modules P4, P5, P6	60 mins	33.3%	60
3	B655	Physics B Unit 3 – ‘Can-Do’ tasks and report in ‘Science in the News’	–	33.3%	60
4	B656	Physics B Unit 4 – Research Study, Data Task and Practical Skills	–	33.3%	60



GCSE Science B

GCSE Science identifies the activities and experiences learners will come across in everyday life, and links these to scientific ideas and their implications for society. It provides the opportunity to acquire the scientific skills, knowledge and understanding necessary for life as a citizen.

B1: Understanding Ourselves B2: Understanding our Environment	C1: Carbon Chemistry C2: Rocks and Metals	P1: Energy for the Home P2: Living for the Future
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This specification comprises six teaching modules which are assessed through three units. Learners/candidates take all three units.

Unit	Unit code	Title	Duration	Weighting	Total mark
1	B621	Science B Unit 1 – modules B1, C1, P1	60 mins	33.3%	60
2	B622	Science B Unit 2 – modules B2, C2, P2	60 mins	33.3%	60
3	B625	Science B Unit 3 – ‘Can-Do’ tasks and report in ‘Science in the News’	–	33.3%	60

GCSE Additional Science B

GCSE Additional Science develops the scientific skills, knowledge and understanding acquired from GCSE Science. It provides opportunities to develop scientific explanations and theories and to develop a critical approach to scientific evidence and methods.

GCSE Additional Science provides distinctive and relevant experience for learners who wish to progress to Level 3 qualifications.

B3: Living and Growing B4: It’s a Green World	C3: The Periodic Table C4: Chemical Economics	P3: Forces for Transport P4: Radiation for Life
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This specification comprises six teaching modules which are assessed through three units. Learners/candidates take all three units.

Unit	Unit code	Title	Duration	Weighting	Total mark
1	B622	Additional Science B Unit 1 – modules B3, C3, P3	60 mins	33.3%	60
2	B624	Additional Science B Unit 2 – modules B4, C4, P4	60 mins	33.3%	60
3	B626	Additional Science B Unit 3 – ‘Can-Do’ tasks and report in ‘Science in the News’	–	33.3%	60



Course details
for
Environmental
and Land-based
Science

Environmental and Land-based Science is the first ever GCSE to be assessed completely in an electronic format. You can teach it as an Additional Applied Science or as a stand-alone GCSE. It might be particularly useful for schools that want to add a 'rural' dimension to their specialist school application. The subject:

- Gives learners the chance to develop the skills, knowledge and understanding they'll need for careers in land-based enterprises
- Provides a more motivational approach to teaching
- Gives learners the chance to develop a more independent and responsible approach to learning and achievement.

<p>Unit 1: Plant Cultivation</p> <ul style="list-style-type: none"> • Soil and environmental factors affecting growth • Nutrient requirements for producing a healthy crop • Plant reproduction, both sexual and asexual • The breeding of improved varieties 	<p>Unit 4: Care of Animals</p> <ul style="list-style-type: none"> • Breeding of animals • Safe handling of animals • Interaction of animals and people
<p>Unit 2: Amenity Horticulture</p> <ul style="list-style-type: none"> • Disease control in intensive and extensive situations • Working safely in the garden • Correct use of garden equipment • The preparation and growing of plants for sale 	<p>Unit 5: Livestock Husbandry</p> <ul style="list-style-type: none"> • Causes of ill health • The safety of treatments • The application of recent scientific advances to the breeding of livestock • Welfare issues • Modern farming methods
<p>Unit 3: Management of the Natural Environment</p> <ul style="list-style-type: none"> • The interrelationships and energy requirements within ecosystems • The effects of human activities on the environment • Traditional agricultural practices • Alternative methods of food production 	

Learners/candidates must take Unit B493 and two further units chosen from B491, B492, B494 and B495. They must also take unit B496.

Unit	Unit code	Title	Duration	Weighting	Total mark
1	B491	Plant Cultivation	45 mins	16.7%	36
2	B492	Amenity Horticulture	45 mins	16.7%	36
3	B493	Management of the Natural Environment	45 mins	16.7%	36
4	B494	Care of Animals	45 mins	16.7%	36
5	B495	Livestock Husbandry	45 mins	16.7%	36
6	B496	ELBS portfolio: Practical Skills (12.4%) Work-related Report (14.7%) Investigative Project (22.9%)	–	50%	109



Course details
for Applied
Science (Double
Award)

This specification gives learners access to some of the technical knowledge, understanding and skills they'll need in the workplace, or in further education or training. It introduces work-related learning, and encourages learners to take more responsibility for their learning and achievements.

<p>Unit 1: Developing Scientific Skills</p> <ul style="list-style-type: none"> • Working safely in science • Carrying out practical tasks • Investigating living organisms • Chemical analysis • Investigating materials 	<p>Unit 3: Science at Work</p> <ul style="list-style-type: none"> • Science in the workplace • Making useful products • Electronic and optical devices • Mechanical devices • Monitoring living organisms
<p>Unit 2: Science for the Needs of Society</p> <ul style="list-style-type: none"> • Living organisms • Humans as living organisms • Obtaining useful chemicals • Chemical and material behaviour • The importance of energy, electricity and radiation • The Earth and Universe 	

This specification is assessed through three mandatory units.

Unit	Unit code	Title	Duration	Weighting	Total mark
1	B481	Developing Scientific Skills	–	33.3%	50
2	B482	Science for the Needs of Society	60 mins	33.3%	60
3	B483	Science at Work	–	33.3%	50

We're making
a few changes

By listening to your feedback we've identified some areas where we can make slight adjustments to improve these qualifications even further, and we have submitted our proposals to QCA for approval.

Twenty First Century Science suite

The 'objective' papers – part of the assessment for GCSE Science, GCSE Additional Science and the separate sciences – test learners' knowledge and understanding of scientific concepts and 'Ideas about Science' (how science works). Setting short, objective questions for these papers has been harder than we expected, so we'd like to include some questions that require longer answers.

When approved by QCA, this change will be effective for January 2010 exams, and all centres will receive details during the spring term 2009.

Gateway Science suite

We've also submitted plans to alter the wording of the assessment criteria for the 'Science in the News' report. If approved by QCA, these changes will clarify the criteria so you can prepare learners more effectively and mark their work more easily.

There won't be any changes to what's required of learners, or to the standard of assessment, so these changes can be implemented as soon as QCA approves them.



Support for GCSE Science teachers

We offer a range of support materials for GCSE Science, developed through extensive research and consultation with teachers. They're designed to save you time while preparing for the specifications, and to support you while teaching them.

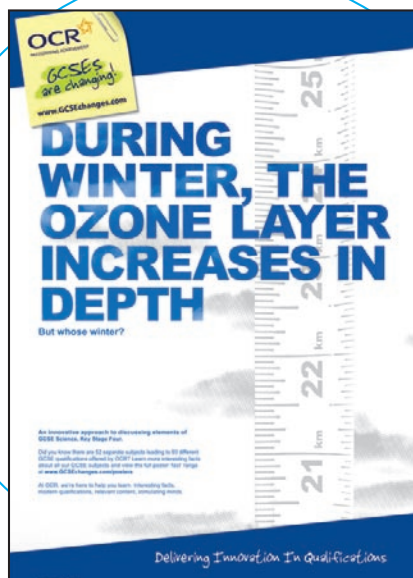
Our GCSE Science support materials and events include:

- Face-to-face training courses
- Endorsed publisher partner resources
- Teacher support guides for internal assessments
- Local cluster Science Support Networks for those delivering Gateway or Twenty First Century Science courses.
- Curriculum Pathways for the sciences document, which explores 15 different models that schools have followed since the GCSE Sciences started in 2006
- Free coursework consultancy scheme

Our online resources include:

- Online networks of subject specialists, for sharing knowledge, views and ideas
- 'Interchange' – a completely secure, free website that helps you with examination administrative tasks
- Past exam papers
- Mark schemes
- Subject e-alerts – for you to register for updates.

For more information on our support, visit www.ocr.org.uk



INSET Training

We offer a wide range of Science training courses, giving you easy access to information about our specifications – direct from the experts.

Our GCSE Sciences *Get Started* courses are for you if you are preparing to deliver the OCR specifications for the first time.

Our Science *Get Ahead* events are for you if you want to improve delivery and assessment of a current OCR specification.

For details of the courses and dates near you and to book your place, visit www.ocr.org.uk/training

We also offer local or regional venues for training courses or can provide courses on your own site.



Publisher support for GCSE Science

We work closely with publishers to provide further resources to support your teaching of our GCSE Science specifications.

Collins publishes support materials for the Gateway Science suite.

Heinemann publishes support materials for the Gateway Science suite, GCSE Applied Science (Double Award), and GCSE Environmental and Land-Based Science.

Oxford University Press publishes support materials for the Twenty First Century Science suite.

For further details visit: www.ocr.org.uk/publishers



Why choose OCR?

Who is OCR?

We're one of the UK's leading awarding bodies, developing up-to-date qualifications for the 21st century.

Why teach OCR specifications?

At OCR, we believe in developing specifications that help you bring the subject to life, so learners are more likely to get involved and achieve more. And because we listen to schools and colleges that teach our specifications, we can improve and update qualifications continually, ensuring you and your learners get as much as possible from the qualification.

You'll receive full support when teaching our qualifications. We're offering more training than ever before at venues near you – plus adaptable schemes of work you can download, and lesson plans drawn up by teachers who teach the specification.

You'll also have access to cluster support networks and e-communities, where there are plenty of opportunities to give feedback and share your thoughts with other teachers. Please see page 19 for more information.



Other qualifications

You may be interested to know about some of our other science qualifications:

- A Level Biology
- A Level Human Biology
- A Level Chemistry A
- A Level Chemistry B (Salters)
- A Level Physics A
- A Level Physics B (Advancing Physics)
- A Level Applied Science
- A Level Geology
- A Level Psychology
- AS Science
- A Level Electronics
- OCR Nationals in Science
- GCSE Psychology
- Entry Level Science



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