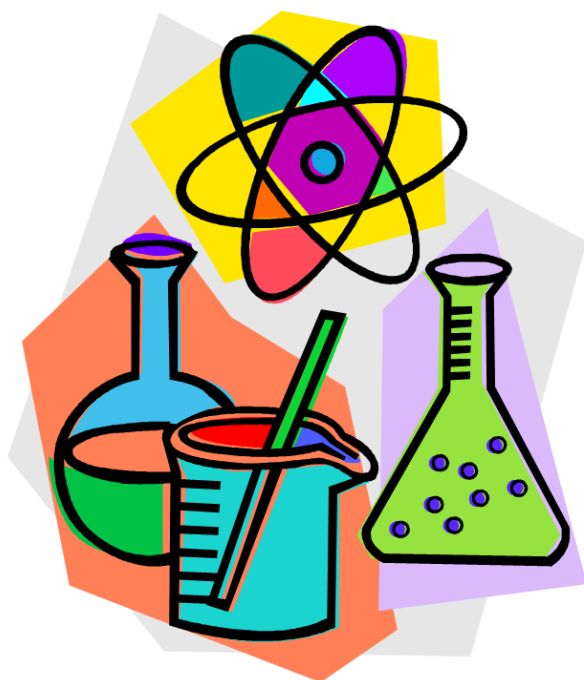


GCSE Separate Sciences Handbook Specification: OCR B 21st Century



About Separate Sciences at Chelsea Academy

Students in the higher attaining sets at Chelsea Academy have the option of studying Separate Sciences GCSE (consisting of separate GCSEs in Biology, Chemistry and Physics). Ideas in each of the subjects are introduced within relevant and interesting settings which help learners to anchor their conceptual knowledge of the range of scientific topics required at GCSE level. Practical skills are also embedded within each specification. Students carry out practical work in preparation for written examinations that specifically test these skills. Each of the Science GCSEs was developed in conjunction with the University of York

Students will cover the three courses in years 10 and 11. This consists of two lessons of Biology, two lessons of Chemistry and two lessons of Physics with each subject being taught by a subject specialist.

Applying to study Separate Sciences

In years 7-9 students at Chelsea Academy study the same curriculum. Students will have the opportunity to apply to move to Separate sciences shortly before the end of year 10. To be considered, students must have achieved excellent grades throughout years 9 and 10.

Progress tests and mock exams

All students will sit half termly progress tests in years 10 and 11. In December and March of year 11 students will sit mock exams to prepare them for their final GCSE exams.

Independent Learning

Students will be set one hour of independent learning by each of their science teachers. This may consist of questions to consolidate what had been learnt in lessons, research using the internet, past paper exam questions or completion of an independent learning booklet.

Revision resources and support materials

It is suggested that all students purchase Biology, Chemistry and Physics revision guides published by CGP. All three of these guides can be purchased using Parent Pay for a total of £8.25 (£2.75 each) and then collected from a science teacher.

The Kerboodle website (www.kerboodle.com) is produced by Oxford University Press and allows students to access a digital copy of the course textbook. Students can obtain the username, password and institution code from their science teachers.

The course specifications for each GCSE are published by OCR. These contain detailed information about what the students are required to learn in each chapter.

Biology:

<http://www.ocr.org.uk/Images/234595-specification-accredited-gcse-twenty-first-century-science-suite-biology-b-j257.pdf>

Chemistry:

<http://www.ocr.org.uk/Images/234599-specification-accredited-gcse-twenty-first-century-science-suite-chemistry-b-j258.pdf>

Physics:

<http://www.ocr.org.uk/Images/234601-specification-accredited-gcse-twenty-first-century-science-suite-physics-b-j259.pdf>

Course Contact If you have any further questions about the course please contact Ms Edge jennifer.edge@chelsea-academy.org

How GCSE Biology is assessed

All exams will be sat at the end of year 11.

Content Overview	Assessment Overview	
<p>Content is split into eight teaching chapters:</p> <ul style="list-style-type: none">• Chapter B1: You and your genes• Chapter B2: Keeping healthy• Chapter B3: Living together – food and ecosystems• Chapter B4: Using food and controlling growth• Chapter B5: The human body – staying alive• Chapter B6: Life on Earth – past, present and future• Chapter B7: Ideas about Science• Chapter B8: Practical Skills <p>Both papers assess content from all eight chapters.</p>	<p>Breadth in biology J257/03</p> <p>90 marks 1 hour 45 minutes Written paper</p>	<p>50% of total GCSE</p>
	<p>Depth in biology J257/04</p> <p>90 marks 1 hour 45 minutes Written paper</p>	<p>50% of total GCSE</p>

How GCSE Chemistry is assessed

All exams will be sat at the end of year 11.

Content Overview	Assessment Overview	
<p>Content is split into eight teaching chapters:</p> <ul style="list-style-type: none">• Chapter C1: Air and water• Chapter C2: Chemical patterns• Chapter C3: Chemicals of the natural environment• Chapter C4: Material choices• Chapter C5: Chemical analysis• Chapter C6: Making useful chemicals• Chapter C7: Ideas about Science• Chapter C8: Practical Skills <p>Both papers assess content from all eight chapters.</p>	<p>Breadth in chemistry J258/03 90 marks 1 hour 45 minutes Written paper</p>	<p>50% of total GCSE</p>
	<p>Depth in chemistry J258/04 90 marks 1 hour 45 minutes Written paper</p>	<p>50% of total GCSE</p>

How GCSE Physics is assessed

All exams will be sat at the end of year 11.

Content Overview	Assessment Overview	
<p>Content is split into eight teaching chapters:</p> <ul style="list-style-type: none">• Chapter P1: Radiation and waves• Chapter P2: Sustainable energy• Chapter P3: Electric circuits• Chapter P4: Explaining motion• Chapter P5: Radioactive materials• Chapter P6: Matter – models and explanations• Chapter P7: Ideas about Science• Chapter P8: Practical Skills <p>Both papers assess content from all eight chapters.</p>	<p>Breadth in physics J259/03 90 marks 1 hour 45 minutes Written paper</p>	<p>50% of total GCSE</p>
	<p>Depth in physics J259/04 90 marks 1 hour 45 minutes Written paper</p>	<p>50% of total GCSE</p>

Chapter B1: You and your genes	Chapter B2: Keeping healthy	Chapter B3: Living together – food and ecosystems
<p>B1.1 What is the genome and what does it do?</p> <p>B1.2 How is genetic information inherited?</p> <p>B1.3 How can and should gene technology be used?</p>	<p>B2.1 What are the causes of disease?</p> <p>B2.2 How do organisms protect themselves against pathogens?</p> <p>B2.3 How can we prevent the spread of infections?</p> <p>B2.4 How can we identify the cause of an infection? (<i>separate science only</i>)</p> <p>B2.5 How can lifestyle, genes and the environment affect my health?</p> <p>B2.6 How can we treat disease?</p>	<p>B3.1 What happens during photosynthesis?</p> <p>B3.2 How do producers get the substances they need?</p> <p>B3.3 How are organisms in an ecosystem interdependent?</p> <p>B3.4 How are populations affected by conditions in an ecosystem?</p>
Chapter B4: Using food and controlling growth	Chapter B5: The human body – staying alive	Chapter B6: Life on Earth – past, present and future
<p>B4.1 What happens during cellular respiration?</p> <p>B4.2 How do we know about mitochondria and other cell structures?</p> <p>B4.3 How do organisms grow and develop?</p> <p>B4.4 How is plant growth controlled? (<i>separate science only</i>)</p> <p>B4.5 Should we use stem cells to treat damage and disease?</p>	<p>B5.1 How do substances get into, out of and around our bodies?</p> <p>B5.2 How does the nervous system help us respond to changes?</p> <p>B5.3 How do hormones control responses in the human body?</p> <p>B5.4 Why do we need to maintain a constant internal environment?</p> <p>B5.5 What role do hormones play in human reproduction?</p> <p>B5.6 What can happen when organs and control systems stop working?</p>	<p>B6.1 How was the theory of evolution developed?</p> <p>B6.2 How do sexual and asexual reproduction affect evolution? (<i>separate science only</i>)</p> <p>B6.3 How does our understanding of biology help us classify the diversity of organisms on Earth?</p> <p>B6.4 How is biodiversity threatened and how can we protect it?</p>
Chapter B7: Ideas about Science		
<p>laS1 What needs to be considered when investigating a phenomenon scientifically?</p> <p>laS2 What conclusions can we make from data?</p> <p>laS3 How are scientific explanations developed?</p> <p>laS4 How do science and technology impact society?</p>		
Chapter B8: Practical Skills		

Chapter C1: Air and water	Chapter C2: Chemical patterns	Chapter C3: Chemicals of the natural environment
<p>C1.1 How has the Earth's atmosphere changed over time, and why?</p> <p>C1.2 Why are there temperature changes in chemical reactions?</p> <p>C1.3 What is the evidence for climate change, why is it occurring?</p> <p>C1.4 How can scientists help improve the supply of potable water?</p>	<p>C2.1 How have our ideas about atoms developed over time?</p> <p>C2.2 What does the Periodic Table tell us about the elements?</p> <p>C2.3 How do metals and non-metals combine to form compounds?</p> <p>C2.4 How are equations used to represent chemical reactions?</p> <p>C2.5 What are the properties of transition metals? (<i>separate science only</i>)</p>	<p>C3.1 How are the atoms held together in a metal?</p> <p>C3.2 How are metals with different reactivities extracted?</p> <p>C3.3 What are electrolytes and what happens during electrolysis?</p> <p>C3.4 Why is crude oil important as a source of new materials?</p>
Chapter C4: Material choices	Chapter C5: Chemical analysis	Chapter C6: Making useful chemicals
<p>C4.1 How is data used to choose a material for a particular use?</p> <p>C4.2 What are the different types of polymers? (<i>separate science only</i>)</p> <p>C4.3 How do bonding and structure affect properties of materials?</p> <p>C4.4 Why are nanoparticles so useful?</p> <p>C4.5 What happens to products at the end of their useful life?</p>	<p>C5.1 How are chemicals separated and tested for purity?</p> <p>C5.2 How do chemists find the composition of unknown samples? (<i>separate science only</i>)</p> <p>C5.3 How are the amounts of substances in reactions calculated?</p> <p>C5.4 How are the amounts of chemicals in solution measured?</p>	<p>C6.1 What useful products can be made from acids?</p> <p>C6.2 How do chemists control the rate of reactions?</p> <p>C6.3 What factors affect the yield of chemical reactions?</p> <p>C6.4 How are chemicals made on an industrial scale? (<i>separate science only</i>)</p>
Chapter C7: Ideas about Science		
<p>IaS1 What needs to be considered when investigating a phenomenon scientifically?</p> <p>IaS2 What conclusions can we make from data?</p> <p>IaS3 How are scientific explanations developed?</p> <p>IaS4 How do science and technology impact society?</p>		
Chapter C8: Practical Skills		

Chapter P1: Radiation and waves	Chapter P2: Sustainable energy	Chapter P3: Electric circuits
<p>P1.1 What are the risks and benefits of using radiations?</p> <p>P1.2 What is climate change and what is the evidence for it?</p> <p>P1.3 How do waves behave?</p> <p>P1.4 What happens when light and sound meet different materials? (<i>separate science only</i>)</p>	<p>P2.1 How much energy do we use?</p> <p>P2.2 How can electricity be generated?</p>	<p>P3.1 What is electric charge? (<i>separate science only</i>)</p> <p>P3.2 What determines the current in an electric circuit?</p> <p>P3.3 How do series and parallel circuits work?</p> <p>P3.4 What determines the rate of energy transfer in a circuit?</p> <p>P3.5 What are magnetic fields?</p> <p>P3.6 How do electric motors work?</p> <p>P3.7 What is the process inside an electric generator? (<i>separate science only</i>)</p>
Chapter P4: Explaining motion	Chapter P5: Radioactive materials	Chapter P6: Matter – models and explanations
<p>P4.1 What are forces?</p> <p>P4.2 How can we describe motion?</p> <p>P4.3 What is the connection between forces and motion?</p> <p>P4.4 How can we describe motion in terms of energy transfers?</p>	<p>P5.1 What is radioactivity?</p> <p>P5.2 How can radioactive materials be used safely?</p> <p>P5.3 How can radioactive materials be used to provide energy? (<i>separate science only</i>)</p>	<p>P6.1 How does energy transform matter?</p> <p>P6.2 How does the particle model explain the effects of heating?</p> <p>P6.3 How does the particle model relate to material under stress?</p> <p>P6.4 How does the particle model relate to pressure in fluids? (<i>separate science only</i>)</p> <p>P6.5 How can scientific models help us understand the Big Bang? (<i>separate science only</i>)</p>
Chapter P7: Ideas about Science		
<p>IaS1 What needs to be considered when investigating phenomenon scientifically?</p> <p>IaS4 How do science and technology impact society?</p> <p>IaS2 What conclusions can we make from data?</p> <p>IaS3 How are scientific explanations developed?</p>		
Chapter P8: Practical Skills		

