

CNCS
Year 8 Science: Curriculum Overview

Rationale: In Year 8, students will build on prior knowledge from Year 7 and develop their skills in key foundation concepts in Biology, Chemistry and Physics. Students will develop their knowledge about how to work safely in a lab and investigate scientific questions. Students will revisit and be introduced to a range of specific subject terminology, learning how to identify and discuss this appropriately. Furthermore, students will be given opportunities to develop their own responses to scientific problems and consider how to apply their knowledge to them.

A learner in Year 8 will know/ have studied:

Key areas in all three sciences, this will build the foundation for further study and investigation. They will have worked in a lab and will know the key safety rules to follow. They will have carried out key investigations to help with their understanding of the areas taught.

- **Biology:** B1: Cell Biology, B2: Organisation, B3: Infection and Response, B4: Bioenergetics; **Chemistry:** C1: Atomic Structure & the Periodic table, C2: Bonding, C4: Chemical Changes, C5 Energy Changes; **Physics:** P1: Energy, P2: Electricity, P3: Particle Model of Matter
- They will know the required practical (RP) activities for each unit and how to carry them out.

A learner in Year 8 will be able to:

Work safely in labs and carry out investigations. They will be able to question and will have begun to understand the world around them from the units studied.

Term	Outline	Assessment	Home Learning	Key Skills/ End Point
1	<p><u>B5 Homeostasis and Response</u> Students will be able to describe the process of homeostasis. They will be able to describe hormonal coordination in humans. They will be able to simply describe reproduction in humans and plants. They will be able to describe the process of the menstrual cycle, fertilisation, gestation and birth.</p> <p><u>C7 Organic Chemistry</u> Students will be able to describe what crude oil is and where it comes from. They will be able to describe the process of fractional distillation and some uses of fuels produced in this process. They</p>	<p><u>1.1 & 1.2 Pit Stops</u> B5.1 Homeostasis</p> <p>C7.1 Organic Chemistry</p> <p>P6.1 Waves P6.2 Waves</p> <p>B6.1 Inheritance, Variation and Evolution B6.2 Inheritance, Variation and Evolution</p> <p><u>1.2 End of Term Assessment</u> B5 Homeostasis and Response C7 Organic Chemistry</p>	<p>Set once per week via Educake.</p>	<p>Students are able to recall key knowledge and apply this knowledge to exam questions from different areas.</p> <p>Students will interpret and then describe and explain what graphs show with reference to the data collected for a range of contexts.</p> <p>Students are able to analyse information given to them, and apply their knowledge gained through the course to evaluate data provided.</p>

	<p>will be able to describe complete and incomplete combustion and write word equations to show this.</p> <p><u>P6 Waves</u> Students will be able to describe transverse and longitudinal waves and identify properties of waves. They will conduct experiments to investigate how light waves travel. They will describe the structure of the eye and investigate how white light is formed. They will describe the different types of electromagnetic waves and their uses.</p> <p><u>B6 Inheritance, Variation and Evolution</u> Students will be able to describe the structure and importance of DNA. They will be able to identify the roles of Watson, Crick, Wilkins and Franklin in its discovery. They will be able to describe continuous and discontinuous variation with regards to natural selection. They will be able to describe the process of selective breeding and explain how changes in the environment can lead to extinction.</p>	<p>P6 Waves B6 Inheritance, Variation and Evolution</p> <p><u>Skills Tested</u> AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. AO3: Analyse information and ideas to: interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures.</p>		
2	<p><u>C8 Chemical Analysis</u> Students will be able to describe the difference between pure substances and mixtures. They will be able to identify a formulation and state some common examples. They will conduct an experiment to investigate the process of chromatography. They will be able to calculate R_f values and analyse chromatograms. They will be able to carry out tests for common gases.</p>	<p><u>2.1 & 2.2 Pit Stops</u> C8.1 Chemical Analysis C10.1 Using Resources P5.1 Forces P5.2 Forces B7.1 Ecology</p>	Set once per week via Educake.	<p>Students are able to recall key knowledge and apply this knowledge to exam questions from different areas.</p> <p>Students will interpret and then describe and explain what graphs show with reference to the data collected for a range of contexts.</p>

	<p><u>C10 Using Resources</u> Students will be able to distinguish between renewable and non-renewable resources. They will be able to describe the difference between pure water and potable water. They will be able to explain the steps for water purification. They will be able to carry out a life cycle assessment, explain the importance of this and identify the limits.</p> <p><u>P5 Forces</u> Students will be able to identify scalar and vector quantities and contact and non-contact forces. They will be able to calculate weight, work done and resultant force. They will conduct an experiment investigating force and extension. They will be able to calculate moments, pressure and speed. They will be able to interpret distance-time graphs.</p> <p><u>B7 Ecology</u> Students will be able to describe interdependence and identify the effect of biotic and abiotic factors. They will be able to describe how animals are adapted to their environment. They will be able to draw and interpret pyramids of number and biomass. They will be able to explain the importance of plant reproduction in food security, how organisms are affected by the environment. They will be able to explain the importance of biodiversity and suggest methods to maintain and improve it.</p>	<p><u>2.2 End of Term Assessment</u> C8 Chemical Analysis C10 Using Resources P5 Forces B7 Ecology</p> <p><u>Skills Tested</u> AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. AO3: Analyse information and ideas to: interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures.</p>		<p>Students are able to analyse information given to them, and apply their knowledge gained through the course to evaluate data provided.</p>
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<p style="text-align: center; font-size: 24pt; font-weight: bold;">3</p>	<p><u>C6 The Rate and Extent of Chemical Change</u> Students will be able to define and calculate rate of reaction. They will be able to describe and conduct investigations into the factors affecting rate of reaction: temperature, concentration, surface area, catalysts.</p> <p><u>P8 Space Physics</u> Students will be able to describe the structure of the universe. They will be able to explain how we have day and night and seasons and years on Earth. They will be able to recall and apply the equation linking weight, mass and gravitational field strength.</p> <p><u>C9 Chemistry of the Atmosphere</u> Students will be able to describe the composition and structure of the Earth. They will be able to describe the rock cycle and the carbon cycle.</p> <p><u>P7 Magnetism and Electromagnets</u> Students will be able to describe how a magnet works. They will be able to describe the difference between permanent and induced magnets. They will be able to use a compass to draw a magnetic field. They will be able to make an electromagnet and describe some uses for electromagnets.</p>	<p><u>3.1 & 3.2 Pit Stops</u> C6.1 The Rate and Extent of Chemical Change</p> <p>P8.1 Space Physics</p> <p>C9.1 Chemistry of the Atmosphere</p> <p>P7.1 Magnetism and Electromagnets</p> <p><u>3.2 End of Term Assessment</u> C6 The Rate and Extent of Chemical Change P8 Space Physics C9 Chemistry of the Atmosphere P7 Magnetism and Electromagnets</p> <p><u>Skills Tested</u> AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. AO3: Analyse information and ideas to: interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures.</p>	<p>Set once per week via Educake</p>	<p>Students are able to recall key knowledge and apply this knowledge to exam questions from different areas.</p> <p>Students will interpret and then describe and explain what graphs show with reference to the data collected for a range of contexts.</p> <p>Students are able to analyse information given to them, and apply their knowledge gained through the course to evaluate data provided.</p>
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