

Curriculum Map 2021/2022

YEAR 10 SCIENCE

GREEN = CROSS CURRICULAR LINKS TO EXPLORE

The understanding of scientific thinking is fundamental to making decisions in society that affect us all. This enables students to broaden their minds to make informed decisions about all aspects of the world in which we live. We are passionate about the subject as a way of understanding the universe and the excitement and enjoyment it can bring to how we view the world around us. We encourage the study of Biology, Chemistry and Physics equally and separately but recognise the common skills required by all three.

We believe the study of Science give students the skills they need that are useful to them for later learning and decision making for any subjects they study in the future. The study of Science also paves the way for a vast array of careers and job opportunities whether they require pure scientific knowledge or an application of the skills and understanding gained through the study of the subjects.

Fundamental skills essential for Science include analysis of data, communication of ideas through speech and writing, application of knowledge to explain natural phenomena and make predictions, use of evidence to come to conclusions and the use of practical skills to carry out experiments.

Year 10 Science - Learners study Biology, Chemistry and Physics using a narrative-based approach, following the OCR 21st Century specification. Ideas 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 embedded within the specification and learners are expected to carry out a range of practical work in preparation for a written examination, in which these skills will be tested. In Year 10 students will either study Combined or Separate Sciences.

	Autumn 1	Autumn 2	Spring 3	Spring 4	Summer 5	Summer 6
CONTENT	<u>Living together – food and ecosystems</u> • Photosynthesis	<u>Chemicals of the natural environment</u> • Properties of	<u>Electric Circuits</u> • Current • Series and parallel	<u>Using food and controlling growth</u> • Respiration	<u>Material Choices</u> • Using data to choose a material	<u>Explaining Motion</u> • Forces • Motion
Declarative						

Knowledge – 'Know What'	<ul style="list-style-type: none"> Mode and function of enzymes Diffusion, osmosis, active transport Structure and function of plants Food chains and webs Pyramids of number and biomass transfer Biotic and abiotic factors Sampling methods 	<ul style="list-style-type: none"> metals <ul style="list-style-type: none"> Extracting metals Electrolysis Extraction and separation of crude oil 	<ul style="list-style-type: none"> circuits <ul style="list-style-type: none"> Energy transfers in a circuit Magnetic fields Electric motors 	<ul style="list-style-type: none"> Subcellular structures Microscopy The cell cycle Cell division Stem cells 	<ul style="list-style-type: none"> Bonding and structure Nanoparticles Life Cycle Assessments 	<ul style="list-style-type: none"> Energy Transfers
Skills <i>Procedural Knowledge – 'Know How to'</i>	<ul style="list-style-type: none"> Suggest, describe and evaluate appropriate sampling methods. Exam skill, understanding command words. <p>Maths Skills Linear relationships, random sampling, systematic sampling.</p> <p>English – use of Tier 2 and 3 vocabulary. Geography – ecosystems, sustainability.</p>	<ul style="list-style-type: none"> Evaluate personal, social, environmental and economic implications and technology. <p>Maths Skills Changing the subject of and rearranging equations. Expressing numbers in standard form, orders of magnitude.</p> <p>English – use of Tier 2 and 3 vocabulary. Religious Studies – ethical issues</p>		<ul style="list-style-type: none"> Exam skill, understanding command words. <p>Maths Skills Changing the subject of and rearranging equations. Distance-time graphs. Scalars and vectors.</p> <p>English – use of Tier 2 and 3 vocabulary. Technology – Life Cycle Assessments of a product (cradle to grave).</p>		
Key Questions	<p>What happens during photosynthesis? How do producers get the substances they need? How are organisms in an ecosystem interdependent? How are populations affected by conditions in an ecosystem?</p> <p>How are the atoms held together in a metal? How are metals with different reactivities extracted? What are electrolytes and what happens during electrolysis?</p> <p>Why is crude oil important as a source of new materials?</p>	<p><i>What is electric charge? (separate science only)</i> What determines the current in an electric circuit? How do series and parallel circuits work? What determines the rate of energy transfer in a circuit? What are magnetic fields? How do electric motors work? <i>What is the process inside an electric generator? (separate science only)</i></p> <p>What happens during cellular respiration? How do we know about mitochondria and other cell</p>		<p>How is data used to choose a material for a particular use? <i>What are the different types of polymers? (separate science only)</i> How do bonding and structure affect properties of materials? Why are nanoparticles so useful? What happens to products at the end of their useful life?</p> <p>What are forces? How can we describe motion? What is the connection between forces and</p>		

			<p>structures?</p> <p>How do organisms grow and develop?</p> <p><i>How is plant growth controlled? (separate science only)</i></p> <p>Should we use stem cells to treat damage and disease?</p>		<p>motion?</p> <p>How can we describe motion in terms of energy transfers?</p>
Assessment	<p>Formative assessment: weekly low stakes 'progress checks' for students in the form of exit tickets.</p> <p>This will be marked by the class teacher and used as a diagnostic tool. Students will have opportunities to redraft their work.</p>	<p>Summative assessment:</p> <p>Students will sit end of unit tests for each module of 40 marks per test, taking 50 minutes to complete. Sat under exam conditions in class.</p>	<p>Formative assessment: weekly low stakes 'progress checks' for students in the form of exit tickets.</p> <p>This will be marked by the class teacher and used as a diagnostic tool. Students will have opportunities to redraft their work.</p>	<p>Summative assessment:</p> <p>Students will sit end of unit tests for each module of 40 marks per test, taking 50 minutes to complete. Sat under exam conditions in class.</p> <p>YEAR 10 PPE'S – APRIL</p>	<p>Formative assessment: weekly low stakes 'progress checks' for students in the form of exit tickets.</p> <p>This will be marked by the class teacher and used as a diagnostic tool. Students will have opportunities to redraft their work.</p>
Extended Learning /Extension Activities	ALL EXTENDED LEARNING, BLENDED LEARNING TASKS, HOMEWORK and CHALLENGE ACTIVITIES - WILL BE SET VIA GOOGLE CLASSROOM				