

St Mary's CE High School Curriculum Map 2023-24

Year 10 Science



GREEN = CROSS CURRICULAR LINKS TO EXPLORE

Intent

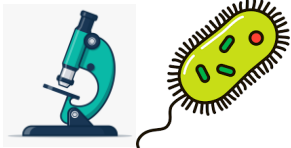


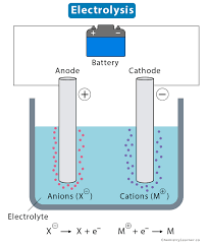
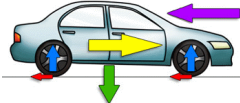
The understanding of scientific thinking is fundamental to making decisions in society that affect us all. This enables students to broaden their minds to make informed decisions about all aspects of the world in which we live. We are passionate about the subject as a way of understanding the universe 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.

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Learners study Biology, Chemistry and Physics using a narrative-based approach, following the AQA 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
						

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CONTENT	<u>Infection and Response</u>	<u>Electricity (continued)</u>	<u>Bioenergetics</u>	<u>Chemical Changes</u>	<u>Forces</u>	<u>Homeostasis</u>
<i>Declarative Knowledge – 'Know What'</i>	<ul style="list-style-type: none"> Communicable Diseases Human defence systems Vaccination Antibiotics and pain killers Discovery and development of drugs 	<ul style="list-style-type: none"> Domestic uses and safety Energy transfer, the National grid <p><u>Atomic structure</u></p> <ul style="list-style-type: none"> Atoms and isotopes Atoms and nuclear radiation <p><u>Bonding and structure</u></p> <ul style="list-style-type: none"> Chemical bonds, ionic, covalent and metallic How bonding and structure are related to the properties of substances Structure and bonding of carbon 	<ul style="list-style-type: none"> Photosynthesis Respiration <p><u>Quantitative Chemistry</u></p> <ul style="list-style-type: none"> Chemical measurements Conservation of mass Chemical equations What is a pure substance? 	<ul style="list-style-type: none"> Reactivity of metals Reactions of acids Electrolysis 	<ul style="list-style-type: none"> Forces and their interactions Work done and energy transfer Forces and elasticity Forces and motion Momentum (HT) 	<ul style="list-style-type: none"> What is homeostasis? The human nervous system Hormonal coordination in humans
Skills <i>Procedural Knowledge – 'Know How to'</i>	<ul style="list-style-type: none"> Exam skill, understanding command words. Evaluate personal, social, environmental and economic implications and technology. <p><u>Maths Skills</u></p>		<ul style="list-style-type: none"> Evaluate personal, social, environmental and economic implications and technology. Debate a theory - evolution 		<ul style="list-style-type: none"> Exam skill, understanding command words. <p><u>Maths Skills</u></p>	

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	<p>Linear relationships, random sampling, systematic sampling.</p> <p>English – use of Tier 2 and 3 vocabulary. Geography – ecosystems, sustainability.</p>	<p><u>Maths Skills</u> 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>	<p>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) and the development of new materials for their enhanced properties.</p>
Key Questions	<p>What are pathogens, and how do they get into the human body?</p> <p>How does the human body respond to pathogens to prevent illness?</p> <p>How does vaccination enhance the body's natural immune system?</p> <p>How do antibiotics work and do not damage human cells but only are effective against bacteria?</p> <p>Antibiotic resistance – is it a future problem?</p> <p>What is electric charge?</p> <p>What determines the current in an electric circuit?</p> <p>How do series and parallel circuits work?</p> <p>What determines the rate of energy transfer in a circuit?</p> <p>What is the national Grid?</p> <p>How is electricity used safely in the home?</p>	<p>What happens during photosynthesis?</p> <p>How do producers get the substances they need?</p> <p>How are organisms in an ecosystem interdependent?</p> <p>How are populations affected by conditions in an ecosystem?</p> <p>What happens during cellular respiration?</p> <p>How do we know about mitochondria and other cell structures?</p> <p>How do organisms grow and develop?</p> <p>How is plant growth controlled?</p> <p>Why is the chemical reaction respiration so important for living organisms?</p> <p>Is there a difference between aerobic and anaerobic respiration?</p> <p>Why does exercise increase respiration rate in humans?</p>	<p>What are forces?</p> <p>How can we describe motion?</p> <p>What is the connection between forces and motion?</p> <p>How can we describe motion in terms of energy transfers?</p> <p>How did Newton describe the interaction of forces written in three laws?</p> <p>How does the human body control it's internal environment?</p> <p>What is the difference between the nervous system and the endocrine (hormones) system?</p> <p>Are all hormones the same?</p> <p>How is the knowledge of hormones used to develop reliable contraception methods?</p>

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	<p>How do bonding and structure affect properties of materials?</p> <p>How do we look for new materials to meet new applications for the future of technical development?</p>		<p>How are the atoms held together in a metal?</p> <p>How are metals with different reactivities extracted?</p> <p>What are electrolytes and what happens during electrolysis?</p>		<p>What causes infertility and can doctors use hormones to treat infertility?</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: 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. 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: 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>	<p>Summative assessment: 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>

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Extended Learning /Extension Activities	ALL EXTENDED LEARNING, BLENDED LEARNING TASKS, HOMEWORK and CHALLENGE ACTIVITIES - WILL BE SET VIA GOOGLE CLASSROOM
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