

Curriculum Map 2021/2022



ST MARY'S
CE HIGH SCHOOL

YEAR 9 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 9 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 9 students will either study Combined or Separate Sciences.

	Autumn 1	Autumn 2	Spring 3	Spring 4	Summer 5	Summer 6
						
CONTENT	You and Your Genes	Air and Water	Radiation and Waves	Keeping Healthy	Chemical Patterns	Sustainable Energy
<i>Declarative Knowledge –</i>	<ul style="list-style-type: none"> The human genome Inheritance and variation 	<ul style="list-style-type: none"> The atmosphere Temperature changes in chemical 	<ul style="list-style-type: none"> Risks and benefits of radiation The Greenhouse Effect 	<ul style="list-style-type: none"> Causes of disease Protection against pathogens 	<ul style="list-style-type: none"> Models of the atom Periodic Table 	<ul style="list-style-type: none"> Usage of energy Generation of

'Know What'	<ul style="list-style-type: none"> • Gene technology 	reactions <ul style="list-style-type: none"> • Climate change • Potable water 	<ul style="list-style-type: none"> • The behaviour of waves 	<ul style="list-style-type: none"> • Preventing the spread of infection • The impact of lifestyle, environment and genes on health • Treating Disease 	<ul style="list-style-type: none"> • Metals and non-metals • Chemical formulae and equations 	Electricity <ul style="list-style-type: none"> • Renewable Energy
Skills <i>Procedural Knowledge – 'Know How to'</i>	<ul style="list-style-type: none"> • Understand how scientific theories and methods develop over time. • Consider ethical issues in Science. • Identify and explain correlation. <p><u>Maths Skills</u> Balance chemical equations, probability and percentage likelihood of an event occurring.</p> <p>English – use of Tier 2 and 3 vocabulary. Geography – the effects of combustion on air quality and the atmosphere. Sustainability. Religious Studies- ethical ideas about conception and when does life begin?</p>	<ul style="list-style-type: none"> • Assess whether precise measurements have been taken in an experiment. • Understand a casual mechanism must be established to lend evidence if a correlation is identified. <p><u>Maths Skills</u> Probability, percentages, drawing and interpreting graphs.</p> <p>English – use of Tier 2 and 3 vocabulary.</p>	<ul style="list-style-type: none"> • Explain what is meant by 'random error' and 'systematic error' and how to reduce these errors. <p><u>Maths Skills</u> Probability, percentages, drawing and interpreting graphs.</p> <p>English – use of Tier 2 and 3 vocabulary. Geography – Sustainability Religious Studies – The concept of Stewardship and looking after our planet.</p>			
Key Questions	<p>What is the genome and what does it do? How is genetic information inherited? How can and should gene technology be used?</p> <p>How has the Earth's atmosphere changed over time, and why? Why are there temperatures changes in chemical reactions? What is the evidence for climate change, why is it occurring? How can scientists help improve the supply of potable water?</p>	<p>What are the risks and benefits of using radiations? What is climate change and what is the evidence for it? How do waves behave? <i>What happens when light and sound meet different materials? (separate science only)</i></p> <p>What are the causes of disease? How do organisms protect themselves against pathogens? How can we prevent the spread of infections?</p>	<p>How have our ideas about atoms developed over time? What does the Periodic Table tell us about the elements? How do metals and non-metals combine to form compounds? How are equations used to represent chemical reactions? <i>What are the properties of transition metals? (separate science only)</i></p> <p>How much energy do we use?</p>			

			<p><i>How can we identify the cause of an infection? (separate science only)</i></p> <p>How can lifestyle, genes and the environment affect my health?</p> <p>How can we treat disease?</p>		How can electricity be generated?	
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 9 EXAMS – JANUARY</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>
Extended Learning /Extension Activities	<p>ALL EXTENDED LEARNING, BLENDED LEARNING TASKS, HOMEWORK and CHALLENGE ACTIVITIES - WILL BE SET VIA GOOGLE CLASSROOM</p> <p>STEM CLUB – begins in Autumn Term, open to all Year 9 students.</p>					