St Mary's CE High School Curriculum Map 2023-24
Year 11 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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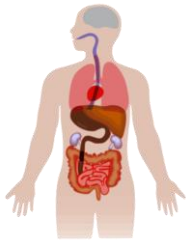
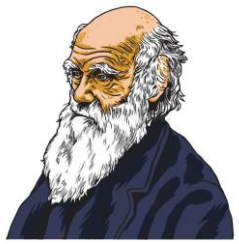
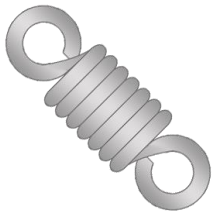
Learners study Biology, Chemistry and Physics using a narrative-based approach, following the OCR 21st Century specification. Ideas are introduced within relevant and interesting settings which help learners to anchor their conceptual knowledge of the range of scientific topics required at GCSE level. 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 11 students will either study Combined or Separate Sciences. Students will sit their final examinations in the Summer term of Year 11.

	Autumn 1	Autumn 2	Spring 3	Spring 4	Summer 5	Summer 6
						

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CONTENT *Declarative Knowledge – 'Know What'*	**<u>The Human Body – staying alive</u>** • Transport of substances • Nervous system • Hormones • Homeostasis • Hormones in reproduction • Failure of organs and control systems	**<u>Chemical analysis</u>** • Purity of substances • Calculating the amount of substances in a reaction • Measuring the amount of chemicals **<u>Radioactive Materials</u>** • Radioactivity • Using radioactive materials safely	**<u>Life on Earth- past, present and future</u>** • Evolution • Classification • Maintaining Biodiversity **<u>Making Useful Chemicals</u>** • Acids and Bases • Rates of reactions • Chemical yields	**<u>Matter- models and explanations</u>** • Particle model • Density • Specific heat capacity and specific latent heat • Extension in a spring	**<u>Revision and Exam Preparation</u>** No new content will be delivered in this term as students have completed the course. Year 11 students will spend time in class with their teacher consolidating their knowledge and revision skills in preparation for upcoming GCSE examinations.	Students who wish to continue on to a 7 year Science journey will have the opportunity to attend Post 16 taster sessions in the below subjects: **A Level Biology** **A Level Chemistry** **A Level Physics** **BTEC Level 3 Applied Science**
Skills *Procedural Knowledge – 'Know How to'*	• Recognise the importance of peer review • Consider perceived vs calculated risk <u>Maths Skills</u> Surface area of a cube, volume of a cube, surface area to volume rations. Rates of reaction Calculate the gradient of a line. Use the tangent to a curve to calculate gradient. Find the area under a line graph.		• Evaluate personal, social, environmental and economic implications and technology. <u>Maths Skills</u> Substituting values into an equation and calculation of an unknown value. English – use of Tier 2 and 3 vocabulary. Religious Studies – Theory of Evolution is controversial. Stewardship in maintaining Biodiversity. Geography – Sustainability.		• Exam skill, understanding command words. English – use of Tier 2 and 3 vocabulary.	

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	English – use of Tier 2 and 3 vocabulary.		
Key Questions	How do substances get into, out of and around our bodies? How does the nervous system help us to respond to changes? How do hormones control responses in the human body? Why do we need to maintain a constant internal environment? What role do hormones play in human reproduction? What can happen when organs and control systems stop working? How are chemicals separated and tested for purity? *How do chemists find the composition of unknown samples? (separate science only).* How are the amounts of substances in reactions calculated? How are amounts of chemicals in solutions measured? What is radioactivity? How can radioactive materials be used safely? *How can radioactive materials be used to provider energy? (separate science only)*	How was the theory of evolution developed? *How do sexual and asexual reproduction affect evolution? (Separate science only).* How does our understanding of biology help us classify the diversity of organisms on Earth? How is Biodiversity threatened and how can we protect it? What useful products can be made from acids? How do chemists control the rate of reactions? What factors affect the yield of reactions? *How are chemicals made on an industrial scale (separate science only).* How does energy transform matter? How does the particle model explain the effects of heating? How does the particle model relate to materials under stress? *How does the particle model relate to pressure in fluids? (separate science only).*	

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			How can Scientific models help us understand the Big Bang? (separate science only).			
Assessment	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. WALKING TALKING EXAMS – CLASSROOM BASED – OCTOBER. PPE 1 - NOVEMBER	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.	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. CORE PPE'S - FEBRUARY	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. YEAR 10 PPE'S – APRIL	External exams beginning in May 4 exams for Combined Science: X1 Biology paper X1 Chemistry paper X1 Physics paper X1 Combined Paper 6 exams for Separate Science: Breadth in Biology Depth in Biology Breadth in Chemistry Breadth in Physics Depth in Physics	EXTERNAL EXAMS – MAY-JUNE

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