Curriculum Progression Pathway for Science
Subject Intent: Our vision for Science at George Pindar School is a curriculum that is inclusive and aspirational for all students, which develops an appreciation of the uses and significance of science to society and their own lives as well as the contribution that science has made in the past. **The curriculum has been designed as a 5 year programme that builds on Science at KS2 and prepares students for further study and the world of work at KS5. The National Curriculum is covered at both KS3 and KS4. The most important concepts in the three scientific disciplines, eg. cells, particles and energy, run as threads through the whole curriculum.**
Why is the study of Science important? Studying science allows students to explain the material world and develop a sense of excitement and curiosity about natural phenomena. By learning about the practices of science students will appreciate the nature and status of scientific knowledge; how it has developed over time and how ideas can be adapted when new evidence is available. As students learn science, they will also learn about its uses and significance to society and their own lives. It is not just a subject to be covered in school and then forgotten as students move into the next part of their lives. A good understanding of the three scientific disciplines, Biology, Chemistry and Physics, allows all of us to make sense of information that we meet in our everyday lives. From health and medical information so that we can live healthy lives, the materials that we encounter and why, as humans, we are endeavouring to make changes to the way we manufacture and produce energy to reduce our impact on our world, to making sense of information presented to us in the media (social media, newspapers, television or other sources) so that we can appreciate when it has been oversimplified or provided by an unreliable or biased source. By working towards qualifications in science subjects, students gain highly regarded academic qualifications that provide the foundation for a range of diverse and valuable careers. Whether a student achieves GCSE and then moves into other areas or decides to take their science study to a higher level, qualifications in science or science related subjects are the foundation for a very diverse and interesting range of careers that make a significant contribution to our world.

What skills will the study of Science teach you?

- Curiosity about the material world
- Analytical thinking
- Application of mathematical techniques
- Data analysis
- Communication of information for a variety of audiences, including extended writing
- Critical thinking
- Attention to objectivity and concern for accuracy, precision, repeatability and reproducibility
- Understanding that scientific methods and theories develop over time
- Ability to evaluate risk
- Ability to use equipment safety and correctly

What will you know and understand from your study of Science?

Biology

- Structure and function of living organisms
- Materials and cycles of energy
- Interactions and interdependencies
- Genetics and evolution

Chemistry

- The particulate nature of matter
- Atoms, elements and compounds
- Pure and impure substances
- Chemical reactions
- Energetics
- The Periodic table
- The reactivity series
- Properties of materials
- The Earth and atmosphere

Physics

- Energy and energy changes and transfers
- Motion and forces
- Waves
- Electricity and electromagnetism
- Matter
- Space physics

How does your study of Science support your learning in other subjects?
As a result of studying Science you will develop your skills in communication that are needed for all your subjects. The numeracy skills developed in mathematics are used widely in many subjects and developed and practised in Science.
Knowledge and skills developed in Science are transferable to subjects such as PE, Geography, History, Music, Art, Health and Social Care, Hair and Beauty and Technology subjects.
Studying science provides repeated encounters of content covered in other subjects, allowing you to retrieve and develop your wider understanding of these. For example climate change, the causes and impact, are covered in Biology, Chemistry and Physics as well as Geography

How can you deepen your understanding of Science?
Opportunities to link the products and practices of Science to STEM subjects are sign posted in lessons and will allow you to develop a wider understanding of how the three science subjects relate to the wider world.
By developing your ability to compare different views on science ideas and evaluate the use of science you will be developing higher order thinking skills.

How can Science support your future?
Science provides the foundation for a range of diverse and valuable careers that are crucial for the economic, environmental and social development of the UK and the world.
There are obvious careers that link directly to the study of GCSE Science, 'A' level Sciences and higher level Science qualifications, e.g medical careers, research scientists, engineering.
However, there are many, less obvious, careers that rely on a good understanding of Science. Games designers must have a detailed understanding of forces to ensure that virtual interactions between objects reflect the reality of how they would in the real world.
The National Careers Service provides careers information, advice and guidance as a starting point to find links to content covered in the Science curriculum.

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https://nationalcareers.service.gov.uk/

Exam board used in Y10 & Y11

AQA Combined Science: Trilogy 8464 AQA Biology 8641 AQA Chemistry 8642 AQA Physics 8643

BIOLOGY CURRICULUM PROGRESSION PATHWAY (Some variation in topic timings due to topic rotations, topic order remains the same.)

	Year 7	**Year 8**	**Year 9**	**Year 10**	**Year 11**
Autumn 1	Cells	Plants and Photosynthesis	Ecological relationships Respiration	Cell Biology	Inheritance and Variation
Autumn 2		Food and digestion	Inheritance and Selection	Organisation	Evolution
Spring 1	Animal Reproduction		Fit and Healthy		
Spring 2		Variation and classification	Plants for food	Bioenergetics	
Summer 1		Respiration Plant Reproduction		Infection and Response	
Summer 2	Plants and photosynthesis	Environment and feeding relationships	Cell Biology (GCSE)		

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CHEMISTRY CURRICULUM PROGRESSION PATHWAY (Some variation in topic timings due to topic rotations, topic order remains the same.)					
	Year 7	**Year 8**	**Year 9**	**Year 10**	**Year 11**
Autumn 1	Particles	Simple Chemical Reactions	The Rock Cycle		Organic Chemistry
Autumn 2	Atoms and elements	Compounds and Mixtures	Patterns of Reactivity	Structure and Bonding	
Spring 1	Solutions and mixtures	Rocks and weathering			
Spring 2			Using Chemistry	Quantitative Chemistry	Chemistry of the atmosphere
Summer 1	Acids and alkalis Simple chemical reactions	Metals and their reactions	Atomic structure (GCSE)	Chemical Changes Energy Changes	Using resources
Summer 2					

PHYSICS CURRICULUM PROGRESSION PATHWAY (Some variation in topic timings due to topic rotations, topic order remains the same.)					
	Year 7	**Year 8**	**Year 9**	**Year 10**	**Year 11**
Autumn 1	Energy resources	Magnets and electromagnets	Light	Energy	Forces and elasticity
Autumn 2	Forces and their effects	Heating and cooling	Energy and electricity		
Spring 1		Sound and hearing	Speeding Up	Atomic Structure (Nuclear Physics)	Forces and motion
Spring 2	Electrical circuits	Gravity and space	Pressure and Moments	Electricity	
Summer 1	Solar System and beyond	Light			
Summer 2	Waves			Magnetism and electromagnetism	

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