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 run as golden threads through the whole curriculum. For example: The Cellular Basis of Life; Organisms and their Environment; Substances and their Properties; Dynamic Earth; Matter; Electricity and Magnetism**
Why is the study of Science important? A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes. 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.
What skills will the study of Science teach you?

Science aims to ensure that you develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics develop understanding of the nature, processes and methods of science through different types of science enquiries that help you to answer scientific questions about the world around you. You will be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

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

- **Working Scientifically:**
  - The development of scientific thinking
  - Experimental skills and strategies
  - Analysis and evaluation
  - Vocabulary, units, symbols and nomenclature

- **Biology:**
  - Cellular Basis of Life
  - Heredity and Life Cycles
  - Organisms and their Environment
  - Variation, Adaptation and Evolution
  - Health and Disease

- **Chemistry**
  - Substances and Properties
  - Particles and Structure
  - Chemical Reactions
  - Earth Chemistry
  - Dynamic Earth

- **Physics**
  - Matter
  - Forces and Motion
  - Sound, Light and Waves

- Electricity and Magnetism
- Earth in Space

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 signposted 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. Watching documentaries and visiting museums can also enhance the knowledge and skills you learn in lessons by allowing you to think deeper and get more involved in the scientific concepts being studied.

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; new medicines need to be developed, and these often use computer modelling to support this. As the world develops and becomes a place of international competition, having the key skills and ability to retain large amounts of information becomes increasingly valued. Some careers that rely on your scientific knowledge may not have even been invented yet!
The National Careers Service provides careers information, advice and guidance as a starting point to find links to content covered in

the Science curriculum.
https://nationalcareers.service.gov.uk/

Exam board used in Y10 & Y11
For combined science: AQA Combined Science: Trilogy 8464
For Separate science (triple science) AQA Biology 8641 AQA Chemistry 8642 AQA Physics 8643

BIOLOGY CURRICULUM PROGRESSION PATHWAY (Y7, Y8, Y9 and Y10 are a new Trust aligned Curriculum, Y11 are legacy)

	Year 7	**Year 8**	**Year 9**	**Year 10**	**Year 11**
Autumn 1	Introduction to the lab Cells	Health and Lifestyle	Cell Biology	Communicable Diseases Health and Non-Communicable Disease	Organisms in their environments Inheritance
Autumn 2	Body Systems	Animal and Plant Processes	Cell Division	Plant Biology	Cycles and Biodiversity
Spring 1		Adaptations and Inheritance	Organisation and the Digestive System	Respiration	Cycles and Biodiversity The nervous system and hormonal control
Spring 2	Reproduction	Adaptations and Inheritance	Organisation and the Digestive System Transport in Animals		Variation and evolution
Summer 1		Ecosystems	Transport in Animals	The Nervous System and Hormonal Control	Variation and evolution
Summer 2			Organisms and Their Environments	The Nervous System and Hormonal Control	Revision

CHEMISTRY CURRICULUM PROGRESSION PATHWAY (Y7 and Y9 are a new Trust aligned Curriculum, Y8, Y10 and Y11 are legacy)					
	Year 7	**Year 8**	**Year 9**	**Year 10**	**Year 11**
Autumn 1	Introduction to the lab Materials Particles	Periodic Table	Mixtures and Separation	Ions	
Autumn 2	Separation techniques	Chemical Reactions	Atomic Structure	Chemical Changes	Rates of reaction
Spring 1	Atoms, Elements and Compounds		Atomic Structure	Chemical Calculations	
Spring 2	Atoms, Elements and Compounds	Metals and Acids	The Periodic Table	Extraction of Metals	
Summer 1		Metals and Acids	The Earth's Atmosphere	Covalent Bonds Hydrocarbons Energy Changes	The Earth's resources
Summer 2		The Earth			Revision

PHYSICS CURRICULUM PROGRESSION PATHWAY (Y7 and Y9 are a new Trust aligned Curriculum, Y8, Y10 and Y11 are legacy)					
	Year 7	**Year 8**	**Year 9**	**Year 10**	**Year 11**
Autumn 1	Introduction to the Lab Energy 1	Electricity		Electrical Circuits	Forces in balance Forces and motion
Autumn 2	Energy 1	Electricity Motion and Pressure	Conservation and Dissipation of Energy	Electricity in the Home	Forces and motion
Spring 1	Forces	Motion and Pressure	Energy by Heating and Energy Resources	Forces in Balance	Electromagnetism
Spring 2	Sound and Light			Radioactivity	Waves
Summer 1	Sound and Light Energy 2	Light	The Particle Model of Matter		Revision
Summer 2	Space	Magnetism	The Particle Model of Matter	Waves	Revision