

Year 9: Physics (separate)	Curriculum Intent: Year 9 science looks to build on the foundations from years 7 and 8 and work towards developing knowledge of similar areas as students begin to work towards their GCSE examinations: Physics: Energy, Motion, Waves and Radiation. The subject and procedural knowledge demands increase in this year, and students will be exposed to more complex ideas, models and explanations. Practical Activities (PAG) will be coupled with mathematical skills to build more procedural knowledge, focusing on areas such as data analysis and interpretation of graphs. The scientific knowledge developed through this year will provide the basis for further study in these areas as students enter year 10, with the whole of the content being taught before the year 11 PPE's.						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	
Key ideas and sequence of learning	Physics module 1.2 - Matter - Density - Heat and temperature - Specific heat capacity - Specific latent heat Physics module 5-waves - Wavelength and frequency - Wave speed - Sound	Physics module 5-waves - EM waves and EM spectrum - Uses of EM waves - Imaging using X rays and Infra-red - Lenses - Light and colour	Physics module 6-radioactivity - Isotopes - Radioactive decay - Alpha, beta and gamma radiation - Nuclear equations - Half life - Nuclear Fission and Fusion - Rutherford experiment - Radiation in and out of atoms	Physics module 2-motion - Speed - Vectors and scalars - Acceleration - Distance- time graph - Velocity – time graphs - Kinetic energy and motion calculations	Physics module- 2 Newton's Laws - Forces and interactions - Newtons Laws - Momentum - Work and power	<i>Revision for end of year exams</i> End of Year Exams and review Electric circuit investigations	

Key Questions	1. What is density and how can it be calculated? 2. What happens when substances are heated? 3. What happens when substances change state? 4. What are the properties of waves? 5. How do we calculate wave speed? 6. How do we hear? 7. What is ultrasound and how is it used?	1. What are EM waves and how do we use them? 2. How can EM waves interact with matter? 3. What are lenses and how do they work? 4. How do we perceive colour?	1. What is ionising radiation and how do we measure it? 2. How can we balance nuclear equations? 3. How can we determine the half-life of a radioisotope? 4. How do fission and fusion release energy? 5. How did we discover the nucleus? 6. How do atoms absorb and emit light?	1. How do we calculate and measure speed and acceleration? 2. What are vectors and scalars? 3. How can we interpret distance-time and velocity-time graphs?	1. How do forces arise and what are their effects? 2. How can we show how forces interact with an object? 3. What are Newtons laws? 4. How do we apply physics to describe the motion of an object? 5. What happens in collisions?	
Vocabulary	• Density • Thermal • Temperature • Thermometer • Transverse • Longitudinal • Wavelength • Amplitude • Frequency • Compression • Rarefaction • Ossicles • Cochlea • Ultrasound	• Radio • Microwave • Infrared • Visible • Ultraviolet • X-Ray • Gamma • Lens • Converging • Diverging • Convex • Concave • Focal Point • Principal Axis	• Alpha • Beta • Gamma • Nucleus • Ionising • Ionisation • Absorb • Emit • Unstable • Radioactive • Activity • Isotope • Random • Spontaneous	• Speed • Velocity • Distance • Displacement • Acceleration • Deceleration • Vectors • Scalars	• Reaction • Friction • Tension • Upthrust • Weight • Resultant • Uniform Motion	

		• Real Image • Virtual Image • Magnified • Diminished • Upright • Inverted	• Half Life • Scattering • Excitation • De-Excited			
Practical Skills	• Density determination • Specific heat capacity • Specific latent heat	• Observing waves to measure frequency and wavelength • Refraction • Investigating lenses	• Radiation demonstration • Skittles experiment modelling decay	• Measuring speed and acceleration using rulers, stopwatches and light gates	• Effects of unbalanced forces • Verifying Newton's second law	• Using IT simulations