

Year 9: Physics combined	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: Density, Energy, Waves, Radiation and motion. 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						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	
Key ideas and sequence of learning	Physics module P1.2 -Matter - Density - Heat & temperature - Specific Heat Capacity	Physics module P1 -Matter - Specific Latent Heat - Gas pressure & temperature	Physics module 4- waves - Wavelength and frequency - Wave properties - Wave speed - EM waves and EM spectrum - Uses of EM waves	Physics module 4- radioactivity - Isotopes - Radioactive decay - Alpha, beta and gamma radiation - Nuclear equations	Physics module 4- radioactivity - Half life - Rutherford experiment - Radiation in and out of atoms	Revision for end of year exams End of Year exams and review P2 - motion - Speed - Vectors & scalars - Acceleration	
Key Questions	1. What is density and how can it be calculated? 2. <i>What happens to substances when heated?</i>	1. What happens when substances change state? 2. How do gasses exert pressure?	1. What are the properties of waves? 2. How do we calculate wave speed? 3. What are EM waves and how do we use them? 4. How can EM waves interact with matter?	1. What is ionising radiation and how do we measure it? 2. How can we balance nuclear equations?	1. How can we determine the half-life of a radioisotope? 2. How did we discover the nucleus? 3. How do objects absorb and emit light?	1. How do we calculate and measure speed and acceleration? 2. What are vectors and scalars?	

Vocabulary	• Density • Thermal • Temperature • Thermometer	• Pressure • Collisions	• Transverse • Longitudinal • Wavelength • Amplitude • Frequency • Compression • Rarefaction • Radio • Microwave • Infrared • Visible • Ultraviolet • X Ray • Gamma	• Alpha • Beta • Gamma • Nucleus • Ionising • Ionisation • Absorb • Emit • Unstable • Radioactive • Activity • Isotope • Random • Spontaneous	• Half Life • Scattering • Excitation • De-Excited	• Speed • Velocity • Distance • Displacement • Acceleration • Deceleration • Vectors • Scalars
Practical Skills	• Density • <i>Measuring specific heat capacity</i>	• Measuring specific latent heat	• Observing waves to measure frequency and wavelength • Refraction	• Radiation demonstration	• Skittles experiment modelling decay	• Measuring speed and acceleration using rulers, stopwatches and light gates