		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2

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: 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

	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Key ideas and sequence of learning	**Physics module P1 -Matter** • Density • Gas pressure & temperature **Physics module P2 - forces** • Speed • Vectors and scalars • Acceleration	**Physics module 4- waves** • Kinetic energy calculations and wave equations • Wavelength and frequency • Wave properties • Wave speed • Wavelength and frequency • Wave properties • Wave speed	**Physics module 4- waves** • EM waves and EM spectrum • Isotopes • Alpha, beta and gamma radiation • Nuclear equations	**Physics module 4- waves** • Half life • Radiation in and out of atoms	**Physics module- P3 electricity** • Static Electricity • Magnetism • Currents and fields	***Revision for end of year exams*** End of Year exams and review Investigating circuits
Key Questions	1. What is density and how can it be calculated? 2. How do gasses exert pressure? 3. How do we calculate and measure speed?	1. Mow does speed affect energy carried 2. What are the properties of waves? 3. How do we calculate wave speed?	1. What is the EM spectrum and how does it affect our lives? 2. What is ionising radiation and how do we measure it? 3. How can we balance nuclear equations?	1. How can we determine the half-life of a radioisotope? 2. How do objects absorb and give out light?	1. How can objects become charged up? 2. What is a magnetic field and how is it caused? 3. How can a current generate a field	1. What rules apply to circuits

Vocabulary	Density Pressure Velocity Acceleration Deceleration Distance Displacement Time m/s km/s Equation m/s^2	Transverse longitudinal Wavelength Frequency Ripple tank Compression Rarefaction Lambda	Electromagnetic Radio Microwave Infrared Visible Ultraviolet X-Ray Gamma Alpha Beta Unstable Stable# isotope	Half life Ionisation Absorb Emit excitation de-excited	Attraction Repulsion	Circuit Current Potential Difference Voltage Ammeter Voltmeter
Practical Skills	Density Measuring speed Calculating acceleration	Observing waves to measure frequency and wavelength	Processing radiation data radiation demonstration	skittles experiment modelling decay	charging rods van der Graaff using bar magnets observing fields	**Physics** computer modelling of electrical circuits constructing electrical circuits