Physics Year 10 Curriculum End Points and key vocabulary

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Unit of Work	Particle Model of Matter	Atomic Structure	Forces and Motion		Waves	Magnetism and Electromagnetism
Ethos links	**STEM** – explaining observations	**STEM** – Theories and models developing over time due to technological advances. Radioactive decay and nuclear fusion/fission	**STEM –** understanding stopping distances and linking this to transport **MK** – Calculating speed of journeys around the city		**STEM** – using waves to detect or explore, how lenses are used to improve vision, uses of the EM in communication, medicine and investigation	**STEM** – making loudspeakers and microphones using magnets
Knowledge	By the end of this unit students will know and understand: - What is meant by density, how to calculate it and how to find the density of regular and irregular objects - The conservation of mass when applied to changes of state - Internal energy and how this is changes with temperature - What is meant by specific heat capacity and how it is calculate - What is meant by specific latent heat and how it is calculated - Particle motion in solids, liquids and gases - Causes of pressure in gases and how to use the equation pV=constant (triple only) - How the pressure of a gas can be increased, and how this relates to temperature and work (triple only) (HT)	By the end of this unit students will know and understand: - The structure of an atom and its approximate size - How to calculate the number of protons, neutrons and electrons in an atom - What is meant by isotope, and how ions are formed - The development of the model of the atom and what led to the changes - Why some atoms are radioactive, and how this is measured - The three types of nuclear radiation; alpha, beta and gamma, and their range in air, penetrative ability and ionising power - How to write nuclear equations showing alpha and beta decay - Half life, and how to determine it from given information, including graphs - Radioactive contamination and irradiation - Hazards and uses of radioactive emissions and of background radiation (triple only) - Nuclear fission and fusion (triple only)	By the end of this unit students will know and understand: - The difference between scalar and vector quantities, and some examples of each - Contact and non-contact forces, and some examples of each - The force of weight and how it is calculated - What is meant by resultant force and how to calculate it and represent it with a free body diagram - What is meant by work done - The equation linking force with spring constant and extension and how to use it - Turning forces and how to calculate moments (triple only) - What causes pressure in fluids and how it is calculated using p=F/A and p=hρg - What causes atmospheric pressure - Distance and displacement and use them to calculate speed and velocity - The distance-time relationship and how this is shown on a graph - Acceleration and how to use equations linking to it (a=Δt/v) and v^2-u^2=2as - Velocity time graphs and calculations to find acceleration and distance travelled - Newton's first law and how this affects motion - Newton's second law and the equation F=ma - Newton's third law - What is meant by stopping distance and factors affecting it - What momentum is and how to calculate it - The conservation of momentum and the equation F=mΔv/Δt (triple only)		By the end of this unit students will know and understand: - The properties of transverse and longitudinal waves and their motion - What is meant by frequency and period of a wave, and how to calculate frequency, period and speed of a wave - How waves are reflected (triple only) - How sound waves travel and how humans hear (triple only) - How waves are used for detection and exploration, such as ultrasound waves in medicine and industrial imaging, and echolocation (triple only) - The different types of seismic waves (triple only) - The electromagnetic spectrum, and how electromagnetic waves travel and refract and the properties and uses of some electromagnetic waves - How lenses work to focus images (triple only) - How visible light travels, including the spectrum, how we see colour and how coloured filters work (triple only)	By the end of this unit students will know and understand: - Where the poles of a magnet are and how they interact with each other and other materials around - What is meant by magnetic field and how to plot it - What an electromagnet is, how to make one, and the factors affecting the strength - Fleming's left hand rule and the motor effect, including the use of the equation F=BIl (HT) - The formation of an electric motor - How loudspeakers and microphones use the motor effect (triple only) - Induced potential difference, induced current and the generator effect - How the generator effect is used to generate ac and dc (triple only) - How microphones use the generator effect (triple only) - How the effect of an alternating current in one coil in inducing a current in another is used in transformers - How the ratio of the potential differences across

				- The emission and absorption of infrared radiation and what a perfect black body is (triple only)	the two coils depends on the ratio of the number of turns on each, including how to use the equation
Key vocabulary	Particle Latent heat Internal energy pressure	Alpha Beta Gamma Isotope Radioactive Irradiation Fusion Fission Decay Half-life	Resultant force Scalar Vector Velocity Acceleration Displacement Elasticity Moments Levers Pressure Momentum	Transverse Longitudinal Compression Rarefaction Amplitude Frequency Period Wavelength Seismic Electromagnetic Concave Convex Black body Infrared	Magnetism Electromagnet Solenoid Current Magnetic flux density The motor effect The generator effect Transformer