



## Year 12 Curriculum Overview: **Physics**



	Topics/ content outline:	Powerful Knowledge (key concepts, skills)	What will you be assessed on?	How can you help at home?
<b>Autumn Term</b>	Mechanics (Statics & Dynamics) Bulk Properties of Solids Electricity	Newton's Laws of Motion. "suvat equations" (kinematic equations), vectors – resolving & combining. Projectiles. Momentum & impulse. Work done in dynamics situations. Moments.  Density. Hooke's law. The Young modulus, strain & stress. Stiffness & ultimate tensile strength.  Current as a flow of charge, work done by & on charge. Current-PD characteristics. Practical details/issues.	Mechanics Bulk Properties of Solids	- Question students to test their recall of the topics - Encourage students to turn superglossaries into fact cards - Encourage students to use fact cards properly - Encourage students to use practice topic questions, or work on them together  Links, topic questions etc are available in the Showbie class "Physics ALL Y12".
<b>Spring Term</b>	Progressive & Stationary Waves Refraction Electricity Interference & Diffraction Quantum Phenomena	Progressive waves. Stationary waves. Polarisation. Longitudinal & transverse waves. Harmonics on a string. Refractive index. Total internal reflection. Fibre optics, pulse broadening, material & modal dispersion. Resistivity. Superconductors. Potential dividers. Electromotive force & internal resistance. Diffraction. Superposition. Interference (single slit, double slit & diffraction gratings). The photoelectric effect. Emission & absorption spectra. Wave particle duality.	Progressive & Stationary Waves Refraction Electricity Interference & Diffraction Quantum Phenomena	- Question students to test their recall of the topics - Encourage students to turn superglossaries into fact cards - Encourage students to use fact cards properly - Encourage students to use practice topic questions, or work on them together  Links, topic questions etc are available in the Showbie class "Physics ALL Y12".
<b>Summer Term</b>	Particles Circular Motion (part of "Further Dynamics") Electric Fields	Nuclear model. Isotope notation. The strong nuclear force. Alpha, beta-, beta + (antimatter), and gamma decay. Neutrinos, antimatter, annihilation & pair production. Exchange particle model of forces.  Circular Motion. Centripetal acceleration.  Electrical fields and potential. Orbits of a "classical electrons" in an atom.	Particles	- Question students to test their recall of the topics - Encourage students to turn superglossaries into fact cards - Encourage students to use fact cards properly - Encourage students to use practice topic questions, or work on them together  Links, topic questions etc are available in the Showbie class "Physics ALL Y12".