



Half-term	Y12 Content Covered by Teacher A	Y12 Content Covered by Teacher B
Autumn 1	<p><b>Measurements and errors –</b> Indices and units, Standard form and ratios, estimation Investigations and plotting data, Finding and combining uncertainties, Micrometers and Vernier callipers, Using graphs.</p> <p><b>Waves part 1 –</b> Progressive waves and classifications, Wave speed, Seismic waves, Reflection and ray diagrams of images, Refraction.</p>	<p><b>Mechanics part 1 –</b> Vectors and scalars, Velocity vector diagrams, motion graphs, Equations of motion, Freefall and terminal velocity, Projectile motion, Identifying forces, Upthrust, lift and drag, Free-body diagrams, Coefficient of friction, Moments.</p>
Autumn 2	<p><b>Waves part 2 –</b> The refractive index and geometry, Refraction, TIR and optical fibres, Wave polarisation, Wave superposition, Stationary waves, Interference.</p>	<p><b>Mechanics part 2 –</b> Equilibrium problems, Newtons laws of motion and momentum, Verifying Newton's laws, Conservation of linear momentum, Impulse, Energy in collisions, Work, energy and power, Conservation of energy, Efficiency, Road safety applications of physics.</p>
Spring 1	<p><b>Waves part 3 –</b> Double slit interference, Interference in thin films, Diffraction gratings.</p>	<p><b>Materials –</b> Density, Hooke's law, Stress and strain, Materials in tension, Young's modulus, Energy stored in stretched materials.</p>
Spring 2	<p><b>Particles and radiation part 1 –</b> Atomic structure, Plum pudding model and specific charge, Measuring the specific charge of an electron, Nuclear model, Stable and unstable nuclei, The fundamental forces, Photons, Mass and energy, Antimatter, Neutrinos, The particle zoo, Leptons and their conservation, Hadron interactions, Strangeness and the quark model of hadrons, Exchange particles (Gauge bosons).</p>	<p><b>Electricity part 1 –</b> Power, energy and efficiency, Charge, current and circuits, P.d. and electrical work done, Ohm's law, Non-ohmic conductors, Combining resistors, Power and resistance, Resistivity, Emf and internal resistance, Efficiency of electrical energy transfer, Resistance and temperature.</p>
Summer 1	<p><b>Particles and radiation part 2 –</b> Emission spectra, Bohr model of the atom - energy levels, ionisation, Excitation and de-excitation, Fluorescent tubes.</p>	<p><b>Electricity part 2 –</b> Semiconductors, Superconductors, Potential dividers.</p>
Summer 2	<p><b>Particles and radiation part 3 –</b> Photoelectric effect, Millikan's experiment, Calculating Planck's constant, Wave-particle duality - De Broglie wavelength, Electron diffraction.</p>	<p><b>Further mechanics part 1 –</b> Uniform circular motion, Centripetal acceleration, Circular motion on the road &amp; air, Circular motion on theme park rides, Circular motion practical, Oscillations and phase difference.</p>

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Autumn 1	<b>Fields part 1 –</b> Static electricity and electric field patterns, Electric field strength, Electric potential, Coulomb's law, Capacitance, Energy stored by capacitors, Charging a capacitor, Discharging a capacitor.	<b>Further mechanics part 2 –</b> Simple harmonic motion (SHM), Mass-spring system investigation, Pendulum investigation, Energy in SHM, Forced oscillations and resonance.
Autumn 2	<b>Fields part 2 –</b> Magnetic fields and their effects, Magnetic flux density, Force on a wire, Moving charges in a magnetic field, Magnetic flux and flux linkage, Electromagnetic induction, AC / DC and oscilloscope use.	<b>Thermal physics part 1 –</b> Internal energy of a system - 1st law of thermodynamics, Specific heat capacity, Specific Latent heat.
Spring 1	<b>Fields part 3 –</b> Investigate using a search coil and an oscilloscope flux linkage and angle of B field, Transformers, Transmission of electrical power, Gravitational fields and Newton's law of universal gravitation, Gravitational potential, Orbits of planets and satellites, Types of orbit.	<b>Thermal physics part 2 –</b> Gas laws - Boyle's law, Charles' law, Pressure law, Avagadro and the Ideal gas laws, Molecular kinetic theory model, Deriving the kinetic theory equation.
Spring 2	<b>Astrophysics –</b> Early telescopes and lenses, Chromic and spherical aberration, Problems with ground-based telescopes, Resolving power and collecting power, Non-visible light telescopes, Making very large telescopes with CCDs. Stellar evolution, Stellar classification, Cosmology, Exoplanets.	<b>Nuclear physics –</b> Discovery of the nucleus, Alpha, beta and gamma radiation, Investigate the inverse square of intensity of gamma radiation, nuclear decay, Nuclear radius, Mass and energy equivalence, Binding energy per nucleon, Induced fission, nuclear power stations.
Summer 1	<b>Revision –</b> Examination-focussed revision.	<b>Revision –</b> Examination-focussed revision.