Curriculum Map

Sandringham School
'Everybody can be Somebody'

Subject: KS5 Physics

Time period	Autumn 1 (Year 12)	Spring 1 (Year 12)	Summer 1 (Year 12)	Autumn 2 (Year 13)	Spring 2 (Year 13)
Content *Declarative Knowledge – 'Know What'*	**0 Measurements, errors** - Fundamental (base) units: mass, length, time, amount of substance, temperature, electric current and their associated SI units. - Derived SI units. - Knowledge and use of the SI prefixes, values and standard form. - Students should be able to use the prefixes: T, G, M, k, c, m, μ, n, p, f. - Students should be able to convert between different units of the same quantity, eg J and eV, J and kW h. - Students should be able to identify random and systematic errors and suggest ways to reduce or remove them. - Precision, repeatability, reproducibility, resolution and accuracy. - Students should understand the link between the number of significant figures in the value of a quantity and its associated uncertainty. - Absolute, fractional and percentage uncertainties represent uncertainty in the final answer for a quantity. - Combination of absolute and percentage uncertainties. - Students should be able to combine uncertainties in cases where the measurements that give rise to the uncertainties	**1 Matter and radiation** - Can you represent a simple model of the atom, including the proton, neutron, and electron? - Can you describe charge and mass of the proton, neutron, and electron in SI units and relative units? - Can you explain the specific charge of the proton and the electron, and of nuclei and ions? - Can you define and use 'proton number Z, nucleon number A' nuclide notation? - Can you recognise and use the notation? - Can you define isotopes and use isotopic data? - Can you explain the strong nuclear force and its role in keeping the nucleus stable? - Can you describe short-range attraction up to approximately 3 fm and very-short range repulsion closer than approximately 0.5 fm? - Can you describe unstable nuclei; alpha and beta decay? - Can you use equations for alpha decay and β− decay, including the need for the neutrino? Can you explain how the existence of the neutrino was hypothesised to account for conservation of energy in beta decay?	**3 Quantum Physics** - Can you explain threshold frequency and the photon explanation of threshold frequency? - Can you explain work function ϕ and stopping potential? - Can you recognise and use the photoelectric equation: h f = ϕ + EK (max)? - Can you explain that EK (max) is the maximum kinetic energy of the photoelectrons? - Can you explain ionisation and excitation? - Can you describe the electron volt? - Can you convert eV into J and vice versa? - Can you use line spectra as evidence for transitions between discrete energy levels in atoms? - Can you use the formula h f = E1 − E2? - Can you explain why electron diffraction suggests that particles possess wave properties and the photoelectric effect suggests that electromagnetic waves have a particulate nature? - Can you calculate the de Broglie wavelength using , where mv is the momentum? - Can you explain how and why the amount of diffraction changes when the momentum of the particle is changed?	**17 Circular motion** - Can you recognise uniform motion in a circle? - Can you describe what you need to measure to find the speed of an object moving in uniform circular motion? - Can you define angular displacement and angular speed? - Can you explain why velocity is not constant when an object is travelling uniformly in a circle? - Can you determine the direction of the acceleration? - Can you calculate the centripetal force? - Can you explain why a passenger in a car seems to be thrown outwards if the car rounds a bend too quickly? - Can you describe what happens to the force between the passenger and his seat when travelling over a curved bridge? - Can you identify the forces that provide the centripetal force on a banked track? - Can you describe when the contact force on a passenger on a 'big dipper' ride is the greatest? - Can you describe the condition that applies when a passenger just fails to keep in contact with her seat? **18 Simple Harmonic Motion**	**23 Capacitors** - Can you describe in terms of electron flow what is happening when a capacitor charges up? - Can you relate the potential difference (pd) across the plates of a capacitor to the charge on its plate? - Can you discuss what capacitors are used for? - Can you explain why a capacitor stores energy as it is being charged? - Can you describe the form of energy that is stored by a capacitor? - Can you describe what happens to the amount of energy stored if the charge stored is doubled? - Can you describe and interpret the shape of the Q-t charging curves and the shape of the Q-t discharging curves? - Can you explain which circuit components you would change to make the charge/discharge slower? - Can you define the time constant of a capacitor-resistor circuit? - Can you explain how a dielectric affects a capacitor? - Can you define relative permittivity and dielectric constant? - Can you describe the action of a simple polar molecule rotating in an electric field?

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	are added, subtracted, multiplied, divided, or raised to powers. - Represent uncertainty in a data point on a graph using error bars. - Determine the uncertainties in the gradient and intercept of a straight-line graph. - Individual points on the graph may or may not have associated error bars. - Students should be able to estimate approximate values of physical quantities to the nearest order of magnitude. - Students should be able to use these estimates together with their knowledge of physics to produce further derived estimates also to the nearest order of magnitude. **6 Forces in action** - Can you describe the nature of scalars and vectors, and give examples of each? - Can you add vectors by calculation and scale drawing? - Can you resolve vectors into two components at right angles to each other, including components of forces along and perpendicular to an inclined plane? - Can you solve problems using resolved forces or a closed triangle? - Can you describe the conditions for equilibrium for two or three coplanar forces acting at a point? - Can you define equilibrium in the context of an object at rest or moving with constant velocity?	- Can you explain that, for every type of particle, there is a corresponding antiparticle? - Can you compare particle and antiparticle mass, charge, and rest energy in MeV? - Can you explain that the positron, antiproton, antineutron, and antineutrino are the antiparticles of the electron, proton, neutron, and neutrino respectively? - Can you use the photon model of electromagnetic radiation and the Planck constant? - Can you explain annihilation and pair production, and the energies involved? - Can you explain the four fundamental interactions: gravity, electromagnetic, weak nuclear, and strong nuclear? - Can you describe the concept of exchange particles to explain forces between elementary particles? - Can you explain the electromagnetic force and virtual photons as the exchange particle? - Can you describe the weak interaction limited to $\beta-$ and $\beta+$ decay, electron capture, and electron–proton collisions? - Can you describe W+ and W− as exchange particles? - Can you draw simple diagrams to represent reactions or interactions in terms of incoming and outgoing particles, and exchange particles? - Can you explain that hadrons are subject to the strong interaction?	- Can you explain that knowledge and understanding of the nature of matter changes over time? - Can you explain that changes in understanding of the nature of matter need to be evaluated through peer review and validated by the scientific community? **5 Optics** - Can you define path difference and coherence? - Can you explain interference and diffraction using a laser as a source of monochromatic light? - Can you describe Young's double-slit experiment? - Can you describe the use of two coherent sources or the use of a single source with double slits to produce an interference pattern? - Can you explain fringe spacing using the equation ? - Can you describe the production of an interference pattern using white light? - Can you describe safety issues associated with using lasers? - Can you describe and explain interference produced with sound and electromagnetic waves? - Can you explain how our knowledge and understanding of the nature of electromagnetic radiation has changed over time? - Have you carried out an investigation of interference effects using the Young double-slit experiment and the diffraction grating?	- Can you explain what is meant by one complete oscillation? - Can you define amplitude, frequency, and period? - Can you describe the phase difference between two oscillators that are out of step? - Can you state the two fundamental conditions about acceleration that apply to simple harmonic motion? - Can you describe how displacement, velocity, and acceleration vary with time? - Can you describe the phase difference between displacement and velocity and displacement and acceleration? - Can you state the equation that relates displacement to time for a body moving with simple harmonic motion? - Can you state the point at which the oscillations must start for this equation to apply? - Can you calculate the velocity for a given displacement? - Can you state the conditions that must be satisfied for mass-spring system or simple pendulum to oscillate with simple harmonic motion? - Can you describe how the period of a mass-spring system depends on the mass? - Can you describe how the period of a simple pendulum depends on its length? - Can you describe how, in simple harmonic motion, kinetic energy and potential energy vary with displacement? - Can you describe how these energies vary with time if damping is negligible?	**24 Magnetic fields** - Can you measure the strength of a magnetic field? - Can you state the factors that the magnitude of the force on a current-carrying wire depends on? - Can you determine the direction of the force on a current carrying wire in a magnetic field? - Can you describe what happens to charged particles in a magnetic field? - Can you explain why a force acts on a wire in a magnetic field when a current flows along a wire? - Can you state the equation used to find the force on a moving charge? - Can you describe what happens to the direction of the magnetic force when electrons are deflected by a magnetic field? - Can you explain why the moving charges move in a path that is circular? - Can you state the factors that affect the radius of the circular path? **25 Electromagnetic Induction** - Can you describe what must happen to a conductor (or to the magnetic field in which it's placed) for electricity to be generated? - Can you state the factors that would cause the induced emf to be greater? - Can you discuss whether an induced emf always causes a current to flow?

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	- Can you define the moment of a force about a point as force × perpendicular distance from the point to the line of action of the force? - Can you define a couple as a pair of equal and opposite coplanar forces? - Can you define the moment of couple as force × perpendicular distance between the lines of action of the forces? - Can you explain the principle of moments? - Can you describe and define centre of mass? - Can you explain that the position of the centre of mass of uniform regular solid is at its centre? **7 Motion** - Can you define displacement, speed, velocity, and acceleration? - Can you calculate average and instantaneous speeds and velocities? - Can you draw a diagram to represent methods of uniform and non-uniform acceleration? - Can you explain the significance of areas of velocity–time and acceleration–time graphs, and gradients of displacement–time and velocity–time graphs for uniform and non-uniform acceleration? - Can you explain and use the equations for uniform acceleration? - Can you explain acceleration due to gravity, g? - Can you explain the independent effect of motion in horizontal and vertical	- Can you define the two classes of hadrons: baryons (proton and neutron) and antibaryons (antiproton and antineutron)mesons (pion and kaon)? - Can you define the baryon number as a quantum number? - Can you explain conservation of baryon number? - Can you explain that the proton is the only stable baryon into which other baryons eventually decay? - Can you describe the pion as the exchange particle of the strong nuclear force? - Can you describe kaons as particles that can decay into pions? - Can you explain that leptons are subject to the weak interaction? - Can you describe leptons: electrons, muons, neutrinos (electron and muon types only), and their antiparticles? - Can you describe lepton number as a quantum number? - Can you explain conservation of lepton number for muon leptons and for electron leptons? - Can you describe the muon as a particle that decays into an electron? - Can you describe strange particles? - Can you describe strange particles as particles that are produced through the strong interaction and decay through the weak interaction (e.g., kaons)? - Can you describe strangeness (symbol s) as a quantum	- Can you describe the appearance of the diffraction pattern from a single slit using monochromatic and white light? - Can you describe how the width of the central diffraction maximum varies with wavelength and slit width? - Can you describe the diffraction pattern when light is shone on a plane transmission diffraction grating at normal incidence? - Can you derive $d\sin\theta = n\lambda$? - Can you suggest some applications of diffraction gratings? - Can you calculate the refractive index of a substance using ? - Can you recall that the refractive index of air is approximately 1? - Can you recall and use Snell's law of refraction ($n_1\sin\theta_1 = n_2\sin\theta_2$) for a boundary? - Can you explain total internal reflection using ? - Can you explain fibre optics, including the function of the cladding? - Can you explain material and modal dispersion? - Can you explain the principles and consequences of pulse broadening and absorption**?** **19. Thermal energy transfer** - Gas laws as experimental relationships between p, V, T and the mass of the gas. - Concept of absolute zero of temperature. - Ideal gas equation: $pV = nRT$ for n moles and $pV = NkT$ for N molecules. - Work done = $p\Delta V$	- Can you describe the effects of damping on the characteristics of oscillations? - Can you state the circumstances in which resonance occurs? - Can you distinguish between free vibrations and forced vibrations? - Can you explain why a resonant system reaches a maximum amplitude of vibration? **21 Gravitational fields** - Can you illustrate a gravitational field? - Can you explain what is meant by the strength of a gravitational field? - Can you define w radial field and a uniform field? - Can you define gravitational potential? - Can you calculate the gravitational potential difference between two points? - Can you explain where an object would have to be placed for its gravitational potential energy to be zero? - Can you describe how gravitational attraction varies with distance? - Can you explain what is meant by an inverse-square law? - Can you discuss whether spherical objects, for example planets, can be treated as point masses? - Can you describe the shape of a graph g against r for points outside the surface of a planet - Can you compare this graph with the graph of V against r?	- Can you define the magnetic flux and the magnetic flux linkage? - Can you relate the induced emf in a coil to the magentic flux linkage through it? - Can you state Lenz's law and the conservation law that explains it? - Can you state the two features of the output voltage waveform that change if the coil is turned faster? - Can you explain why the output alternates? - Can you explain why it is preferable for practical generators to have fixed coils and a rotating (electro)magnet? - Can you define an alternating current? - Can you explain what is meant by the rms value of an alternating current? - Can you calculate the power supplied by an alternating current? - Can you explain the purpose of transformers? - Can you describe the energy changes that take place in a transformer? - Can you discuss how the efficiency of transformers is improved by better design? **Option unit** This may vary from class to class however will be one of the following (most commonly Astrophysics): ● Astrophysics ● Medical Physics ● Engineering Physics ● Turning points in Physics

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	directions of a uniform gravitational field? - Can you solve problems using the equations of uniform acceleration? - Can you define and explain the effects of friction? - Can you explain the effect of air resistance on the trajectory of a projectile? **8 Newtons laws** - Can you understand and apply the three laws of motion in appropriate situations? - Can you apply F = m a for situations where the mass is constant? - Can you define and explain the effects of friction? - Can you explain the effects of lift and drag forces? - Can you define and describe terminal speed? - Can you explain that air resistance increases with speed? - Can you explain the effect of air resistance on the factors that affect the maximum speed of a vehicle? **9 Forces and momentum** Can you apply the equation momentum = mass × velocity? - Can you explain the conservation of linear momentum? - Can you apply the principle of conservation of linear momentum to problems in one dimension? - Can you explain force as the rate of change of momentum? - Can you explain that impulse = change in momentum?	number to reflect the fact that strange particles are always created in pairs? - Can you explain conservation of strangeness in strong interactions? - Can you explain that strangeness can change by 0, +1, or –1 in weak interactions? - Can you explain that particle physics relies on the collaborative efforts of large teams of scientists and engineers to validate new knowledge? **2 Quarks and Leptons** - Can you describe the properties of quarks and antiquarks in terms of charge, baryon number, and strangeness? - Can you explain the combinations of quarks and antiquarks required for baryons (proton and neutron only), antibaryons (antiproton and antineutron only), and mesons (pion and kaon only)? - Can you show the decay of the neutron? - Can you explain the change of quark character in β^- and β^+ decay? - Can you apply the conservation laws for charge, baryon number, lepton number and strangeness to particle interactions, given the necessary data? - Can you recognise that energy and momentum are conserved in interactions?	- Avogadro constant NA, molar gas constant R, Boltzmann constant k - Molar mass and molecular mass**.** **20a. Ideal Gases** - Internal energy is the sum of the randomly distributed kinetic energies and potential energies of the particles in a body. - The internal energy of a system is increased when energy is transferred to it by heating or when work is done on it (and vice versa), eg a qualitative treatment of the first law of thermodynamics. - Appreciation that during a change of state the potential energies of the particle ensemble are changing but not the kinetic energies. Calculations involving transfer of energy. - For a change of temperature: Q = mc Δ where c is specific heat capacity. - Calculations including continuous flow. - For a change of state Q = ml where l is the specific latent heat. **20b. Molecular kinetic theory** - Brownian motion as evidence for existence of atoms. - Explanation of relationships between p, V and T in terms of a simple molecular model. - Students should understand that the gas laws are empirical in nature whereas the kinetic theory model arises from theory.	- Can you explain the significance of the gradient of the V-r graph? - Can you state the condition needed for a satellite to be in a stable orbit? - Can you describe what happens to the speed of a satellite if it moves closer to the Earth? - Can you discuss why a geostationary satellite must be in orbit above the equator**?** **22 Electric fields** - Can you explain how to charge a metal object? - Can you describe what the direction of an electric field line shows concerning a test charge? - Can you illustrate the strength of an electric field by using field lines? - Can you describe how to measure, in principle, the strength of an electric field? - Can you discuss whether electric field strength E is a scalar or a vector, and describe how this affects the sign of a test charge you should use? - Can you explain why E should be describe as the force per unit charge instead of the force that acts on one coulomb of charge? - Can you explain why potential is defined in terms of the work done per unit + charge? - Can you calculate the electric potential difference between two points/ - Can you describe how to find the change in electric potential energy from pd?	● Electronics Students will be informed of the option topic at the beginning of year 13 and the full content for each can be found here from page 45 onwards.

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	- Can you apply FΔt = Δ (mv), where F is constant? - Can you explain the significance of the area under a force–time graph? - Can you describe forces that vary with time? - Can you explain that impact force is related to contact time, and apply this to problems involving kicking a football, crumple zones and packaging? - Can you define and explain elastic and inelastic collisions, and explosions? - Can you explain momentum conservation issues in the context of ethical transport design? **10 Work energy power** - Can you explain that energy transferred, W = F s cos θ? - Can you use the formulae: - rate of doing work = rate of energy transfer, P = = Fv - Can you explain variable forces? - Can you explain the significance of the area under a force–displacement graph? - Can you use the formula for efficiency? - Can you explain the principle of conservation of energy? - Can you use the formula ΔEP = m g Δh and EK = 0.5 m v^2? - Can you explain and apply energy conservation to examples involving gravitational potential energy, kinetic energy, and work done against resistive forces? **12 Electricity** - Can you explain electric current as the rate of flow of charge?	**4 Waves** - Can you explain oscillation of particles in terms of amplitude, frequency, wavelength, speed, phase, and phase difference? - Can you explain that phase difference may be measured as angles (radians and degrees) or as fractions of a cycle? - Can you explain the nature of longitudinal and transverse waves, including sound, electromagnetic waves, and waves on a string? - Can you describe the direction of displacement of particles/fields relative to the direction of energy propagation? - Can you recall that all electromagnetic waves travel at the same speed in a vacuum? - Can you explain polarisation as evidence for the nature of transverse waves? - Can you apply your knowledge of polarisers to explain the function of Polaroid material and the alignment of aerials for transmission and reception? - Can you define stationary waves? - Can you describe nodes and antinodes on strings? - Can you use the formula for first harmonic? - Can you describe the formation of stationary waves by two waves of the same frequency travelling in opposite directions? - Can you draw a diagram to explain the formation of stationary waves? - Can you describe stationary waves formed on a string and	- Assumptions leading to pV = 1/3 Nm crms^2 including derivation of the equation and calculations. - A simple algebraic approach involving conservation of momentum is required. - Appreciation that for an ideal gas internal energy is kinetic energy of the atoms. - Use of average molecular kinetic energy equation. - Appreciation of how knowledge and understanding of the behaviour of a gas has changed over time.	- Can you explain why potential (and pd) is measured in V? - Can you describe how the force between tow point charges depends on distance? - Can you calculate the force between two charge objects? - Can you explain what the sign of the force (+ or –) indicates? - Can you state the equation that gives the electric field strength near a point charge? - Can you state the equation that gives the potential associated with a point charge? - Can you explain why E is equal to zero inside a charged sphere? - Can you state which electrical quantity is analogous to mass? - Can you state the main similarities between electric and gravitational fields? - Can you state the principal differences between electric and gravitational fields? **26 Radioactivity** Can you state how big the nucleus is? Can you describe how the nucleus was discovered? Can you explain why it was not discovered earlier? Can you define α, β, and γ radiation? Can you explain why it is dangerous? Can you describe the properties of α, β, and γ radiation? Can you describe what happens to the nucleus in a radioactive change? Can you describe how the intensity of γ radiation changes as it spreads out?	

	- Can you explain potential difference as work done per unit charge? - Can you use the formulae ? - Can you define resistance as ? - Can you recognise and use ohmic conductors, semiconductor diodes, and filament lamps? - Can you explain Ohm's law as a special case where I ∝ V under constant physical conditions? - Can you interpret characteristic graphs where I or V is on the horizontal axis? - Can you explain resistivity and use the equation ? - Can you describe the effect of temperature on the resistance of metal conductors and thermistors? - Can you describe application of thermistors as temperature sensors? - Can you describe and sketch how resistance varies with temperature for a metal wire and for a thermistor? - Can you describe superconductivity as a property of certain materials that have zero resistivity at/below a critical temperature which depends on the material? - Can you describe some applications of superconductors, including their use in the production of strong magnetic fields and the reduction of energy loss in transmission of electric power? - Have you carried out a practical to determine resistivity of a wire using a micrometer, ammeter, and voltmeter?	those produced with microwaves and sound waves? - Can you describe stationary waves on strings in terms of harmonics? - Have you carried out an investigation into how the frequency of stationary waves on a string varies with length, tension, and mass per unit length of the string? **11 Materials** - Can you calculate density? - Can you explain Hooke's law and the elastic limit? - Can you carry out calculations using F = kΔL, with k as stiffness and spring constant? - Can you define and explain tensile strain and tensile stress? - Can you define and explain elastic strain energy and breaking stress? - Can you use the formula: energy stored = F ΔL = area under force−extension graph - Can you describe plastic behaviour, fractures and brittle behaviour, and sketch force–extension graphs to show these behaviours? - Can you apply energy conservation to examples involving elastic strain energy and energy to deform? - Can you explain how spring energy is transformed to kinetic and gravitational potential energy? - Can you interpret simple stress–strain curves? - Can you list and explain energy conservation issues in the context of ethical transport design?		Can you explain how to represent the change in a nucleus when it emits α, β, and γ radiation? Can you explain why ionising radiation is harmful? Can you state the factors that determine whether α, β, or γ are the most dangerous? Can you discuss how exposure to ionising radiation can be reduced? Can you state what is meant by the activity of a radioactive isotope? Can you define the half-life of a radioactive isotope? Can you discuss whether anything affects radioactive decay? Can you discuss whether a radioactive source can decay completely? Can you define exponential decrease? Can you explain why radioactive decay is a random process? Can you describe how to do radioactive dating? Can you define radioactive tracers? Can you discuss what radioactivity is used for in hospitals? Can you discuss what you can tell about radioactive isotopes from an N-Z chart? Can you explain why naturally occurring isotopes don't emit β+ radiation? Can you describe what happens to an unstable nucleus that emits γ radiation? Can you discuss whether more massive nuclei are wider?	

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	13 Circuits - Can you carry out calculations for resistors in series and in parallel? - Can you explain and use the energy and power equations: E = I v t and - P = I V = I2 R = ? - Can you explain the relationships between currents, voltages and resistances in series and parallel circuits, including cells in series and identical cells in parallel? - Can you explain conservation of charge and conservation of energy in dc circuits? - Can you describe how the potential divider is used to supply constant or variable potential difference from a power supply? - Can you explain the use of variable resistors, thermistors, and light dependent resistors in the potential divider? - Can you use the formulae ? - Can you explain terminal pd and emf? - Can you understand and perform calculations for circuits in which the internal resistance of the supply is not negligible? - Have you carried out an investigation into the emf and internal resistance of electric cells and batteries by measuring the variation of the terminal pd across the cell with the current in it? -	- Can you calculate the Young modulus? - Can you use stress–strain graphs to find the Young modulus? - Have you carried out a practical to determine the Young modulus by a simple method?		Can you describe how the radius of a nucleus depends on its mass number A? Can you describe how dense the nucleus is? **27 Nuclear Energy** - Can you explain E = mc2? - Can you describe what happens to the mass of an object when it gains or loses energy? - Can you calculate the energy released in a nuclear reaction? - Can you define binding energy? - Can you state which nuclei are the most stable? - Can you explain why energy is released when a uranium-235 nucleus undergoes fission? - Can you describe how much energy is released in a fission or fusion reaction? - Can you explain why small nuclei can't be split? - Can you explain why large nuclei can't be fused? - Can you explain how a nuclear reactor works? - Can you describe a thermal nuclear reactor? - Can you explain how a nuclear reactor is controlled?	

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Skills *Procedural Knowledge – 'Know How'*	**RPs** Develop experimental methods and techniques for analysing empirical data. Skills in planning, implementing, analysing and evaluating **Topic 7** - Investigation to find g by a free fall method **Topic 12** - Investigation to find the resistivity of a wire **Topic 13** - Investigation to find the internal resistance of a cell	**RPs** Develop experimental methods and techniques for analysing empirical data. Skills in planning, implementing, analysing and evaluating **Topic 11** - Investigation to find the Young's Modulus of a known material **Topic 4** - Investigation into factors affecting standing wave on a string	**RPs** Develop experimental methods and techniques for analysing empirical data. Skills in planning, implementing, analysing and evaluating **Topic 5** - Investigation to find the wavelength of a monochromatic light source	**RPs** Develop experimental methods and techniques for analysing empirical data. Skills in planning, implementing, analysing and evaluating **Topic 18** - Investigation into simple harmonic motion - mass–spring & pendulum. **Topic 20** - Investigation of Boyle's and Charles' laws **Topic 26** - Investigation of the inverse-square law for gamma radiation.	**RPs** Develop experimental methods and techniques for analysing empirical data. Skills in planning, implementing, analysing and evaluating **Topic 23** - Investigation of the charge and discharge of capacitors. **Topic 24** - Investigate how the force on a wire varies with flux density, current and length of a wire. **Topic 25** - Investigate the effect on magnetic flux linkage of varying the angle between a search coil and magnetic field direction.

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Assessment	Year 12 Baseline Test Transition summer work End of Topic Assessments for each Unit. October End of ½ Term Test Christmas End of ½ Term Test RPs - Assessed by class teacher against list of Physics Specific skills and CPAC skills.	End of Topic Assessments for each Unit. Easter End of ½ Term Test RPs - Assessed by class teacher against list of Physics Specific skills and CPAC skills.	End of Topic Assessments for each Unit. RPs - Assessed by class teacher against list of Physics Specific skills and CPAC skills. Year 12 Threshold Exams	Year 12 Summer HBL End of Topic Assessments for each Unit. RPs - Assessed by class teacher against list of Physics Specific skills and CPAC skills. October End of ½ Term Test	Trial Exams (January) End of Topic Assessments for each Unit. RPs - Assessed by class teacher against list of Physics Specific skills and CPAC skills. Easter End of ½ Term Test