

	Autumn		Spring		Summer	
	Learning Cycle 1	Learning Cycle 2	Learning Cycle 3	Learning Cycle 4	Learning Cycle 5	Learning Cycle 6
Topic	1,2,4	3,5,12	6,13	7,11	8,9,10	17,21
Critical Prior Knowledge	KS4 Atoms, KS4 Wave Properties	KS4 reflection and refraction, KS4 electrical circuits.	KS4 Forces and Moments, Electrical Circuits	KS4 Forces and Motion, Motion, Density and Hooke's Law	KS4 Forces and Acceleration, Stopping Distances, Momentum Equation, Kinetic Energy, Efficiency calculations	
Overall Intent (Big ideas and key concepts)	Inside the Atom, Stable and unstable Nuclei, Photons, Particles and Antiparticles, Particle Interactions. particle zoo, Particle sorting, Leptons at work, Quarks and Antiquarks, Conservation Rules, Waves and Vibrations, Measuring Waves, Wave properties, Wave Properties 2, Stationary and Progressive waves, Stationary waves on strings, Oscilloscope.	The photoelectric effect, photoelectricity, collisions of electrons with atoms, energy levels in atoms, energy levels and spectra, wave particle duality, Refraction of Light, Refraction, Total internal reflection, Double slit interference, More on Interference, Diffraction, Diffraction grating, Current and Charge, Potential difference and power, Resistance, Components and their characteristics.	Vectors and scalars, Balanced forces, Moments, Moments ² , Stability, Equilibrium Rules, Statics calculations, Circuit rules, Resistance, EMF and internal resistance, more circuit calculations, Potential divider.	Speed and Velocity, Acceleration, Linear Motion at constant acceleration, Free Fall, Motion Graphs, Calculations Projectile Motion ¹ Projectile Motion ² , Density, Springs, Deformation of Solids, More about stress and strain	Force and Acceleration, $F=ma$, Terminal Speed, On the road, Vehicle Safety, Momentum and Impulse, Impact force, Conservation of Momentum, Elastic and inelastic collisions, Explosions, Work and Energy, Kinetic Energy, Power, Energy and efficiency	Uniform circular motion, Centripetal acceleration, On the road, At the fairground, Gravitational Field Strength, Gravitational Potential, Newton's Law of Gravitation, Planetary Fields, Satellite Motion
Essential Knowledge milestones (What students must master)	Sub atomic particles and the construction of particles in "the particle zoo". Hadrons/Baryons/Mesons and Leptons + conservation rules. Wave properties including stationary and progressive waves and how to use an oscilloscope.	The Photoelectric effect, energy levels of electrons and its implications. Wave-Particle duality. Reflection, refraction and TIR. Superposition from interference with double slit and diffraction grating. Revisit Electrical circuits and solidify previous knowledge and understanding.	Vectors and Scalars, Balanced and unbalanced forces and turning forces. Electrical Circuit theory and calculations. EMF and internal resistance of batteries / power supplies. Potential divider and calculations.	Forces and changes in Motion, Free fall. Motion graphs and motion calculations. Density. Hooke's Law and extend to Young's Modulus using Stress and Strain.	Use of $F=ma$, why terminal velocity is reached and decreasing acceleration before. Vehicle safety and Force being the rate of change of momentum + calculations. Conservation of momentum in all collisions and explosions. Work Done and Energy Transferred, Kinetic energy, Power and Efficiency.	Circular motion (eg. Orbits) and centripetal acceleration with calculations. Gravitational field Strength, Gravitational potential and Newton's Laws of Gravity. Planetary and Satellite motion.
Cultural Capital	Practical techniques, health and safety, applied physics skills. Communication of Science ideas and concepts.		Practical techniques, health and safety, applied physics skills. Communication of Science ideas and concepts.		Practical techniques, health and safety, applied physics skills. Communication of Science ideas and concepts.	
Assessment Points	Regular Afl embedded into lessons. End of Topic Tests per chapter. Jan AS Paper-A mock	Regular Afl embedded into lessons. End of Topic Tests per chapter. Jan AS Paper-A mock	Regular Afl embedded into lessons. End of Topic Tests per chapter. June AS Paper-A mock	Regular Afl embedded into lessons. End of Topic Tests per chapter. June AS Paper-A mock	Regular Afl embedded into lessons. End of Topic Tests per chapter. June AS Paper-A mock	Regular Afl embedded into lessons. End of Topic Tests per chapter. June AS Paper-A mock
ECC Student Characteristics	Through these units we will encourage students to work hard and be resilient individuals who embrace challenge and through their creativity and endeavours become reflective learners . Mastering the key concepts of each topic before being able to build on these ideas as they are interleaved through other units later in the course.					
Connection to future learning (When is this developed / revisited)?						