

Curriculum Mapping – Skills and Knowledge – Combined Science – Physics

Big ideas	Year 12		Year 13	
Energy	5 Work Energy Power <ul style="list-style-type: none"> • Work, energy and power motion 11 Waves 1 <ul style="list-style-type: none"> • Wave motion • Electromagnetic waves 12 Waves 2 <ul style="list-style-type: none"> • Superposition • Stationary waves 	13 Quantum Physics <ul style="list-style-type: none"> • Photons • The photoelectric effect • Wave particle duality 	27 Medical Physics <ul style="list-style-type: none"> • Using X rays • Diagnostic methods in medicine • Using ultrasound 	
Forces and Fields	3 Motion <ul style="list-style-type: none"> • Kinematics and dynamics • Linear motion • Projectile motion • Motion with non-uniform acceleration motion 4 Forces in Action <ul style="list-style-type: none"> • Equilibrium motion • Density [and pressure] motion 7 Laws of Motion and Momentum <ul style="list-style-type: none"> • Newton's laws of motion • Momentum motion 	8 Charge and Current <ul style="list-style-type: none"> • Charge and current motion 9 Energy, Power and Resistance <ul style="list-style-type: none"> • E.m.f. and p.d. motion • Resistivity and resistance motion • Power motion • Series and parallel circuits motion • Internal resistance motion • Potential dividers 	16 Circular Motion <ul style="list-style-type: none"> • Circular motion • Centripetal force 17 Oscillations <ul style="list-style-type: none"> • Simple harmonic oscillations • Energy of an oscillator • Damping 18 Gravitational Fields <ul style="list-style-type: none"> • Point and spherical masses • Newton's law of gravitation • Planetary motion • Gravitational potential and energy 19 Stars <ul style="list-style-type: none"> • Stars • Electromagnetic radiation 20 Cosmology <ul style="list-style-type: none"> • Cosmology 	21 Capacitance <ul style="list-style-type: none"> • Capacitors • Energy stored by a capacitor • Charging and discharging capacitors 22 Electric Fields <ul style="list-style-type: none"> • Point and spherical charges • Coulomb's law • Uniform electric field 23 Magnetic Fields <ul style="list-style-type: none"> • Electric potential energy fields • Magnetic fields • Motion of charged particles • Electromagnetism
Matter and Materials	6 Materials <ul style="list-style-type: none"> • Springs motion • Mechanical properties of materials motion 		14 Thermal Physics <ul style="list-style-type: none"> • Temperature • Solid, liquid and gas • Thermal properties of materials 15 Ideal Gases <ul style="list-style-type: none"> • Ideal gases 	24 Particle Physics <ul style="list-style-type: none"> • The nuclear atom fields • Fundamental particles fields 25 Radioactivity <ul style="list-style-type: none"> • Radioactivity fields 26 Nuclear Physics <ul style="list-style-type: none"> • Nuclear fission and fusion fields

Subject: Physics
Year group: 12

Topic	Practical Skills and Foundation	Forces and Motion 1	Forces and Motion 2	Electrons Waves and Photons 1	Electrons Waves and Photons 2
Prior Knowledge	KS4 prior learning <ul style="list-style-type: none"> • CP1 Motion • CP2 Forces and Motion • CP7 Forces doing work • Cp8 Forces and their effects 	KS4 prior learning <ul style="list-style-type: none"> • CP1 Motion • CP2 Forces and Motion • CP3 Conservation of Energy • CP7 Forces doing work • Cp8 Forces and their effects 	KS4 prior learning <ul style="list-style-type: none"> • CP2 Forces and Motion • CP13 Forces and Matter 	KS4 prior learning <ul style="list-style-type: none"> • CP4 Waves • CP5 Light and the EM Spectrum • CP9 Electricity 	KS4 prior learning <ul style="list-style-type: none"> • CP4 Waves
Knowledge	<ul style="list-style-type: none"> • Physical quantities • S.I. units • Measurements and uncertainties • Scalars and vectors • Planning, implementing, analysis and evaluation 	3 Motion <ul style="list-style-type: none"> • Kinematics and dynamics • Linear motion • Projectile motion • Motion with non-uniform acceleration motion 4 Forces in Action <ul style="list-style-type: none"> • Equilibrium motion • Density [and pressure] motion 5 Work Energy Power <ul style="list-style-type: none"> • Work, energy and power motion 	6 Materials <ul style="list-style-type: none"> • Springs motion • Mechanical properties of materials motion 7 Laws of Motion and Momentum <ul style="list-style-type: none"> • Newton's laws of motion • Momentum motion 	8 Charge and Current <ul style="list-style-type: none"> • Charge and current motion 9 Energy, Power and Resistance <ul style="list-style-type: none"> • E.m.f. and p.d. motion • Resistivity and resistance motion • Power motion 10 Electrical Circuits <ul style="list-style-type: none"> • Series and parallel circuits motion • Internal resistance motion • Potential dividers 11 Waves 1 <ul style="list-style-type: none"> • Wave motion • Electromagnetic waves 	12 Waves 2 <ul style="list-style-type: none"> • Superposition • Stationary waves 13 Quantum Physics <ul style="list-style-type: none"> • Photons • The photoelectric effect • Wave particle duality
Test Pattern		3 x interim tests (50 marks)	2 x interim tests (50 marks)	6 x interim tests (50 marks)	2 x interim tests (50 marks)
	End of year Exam (80 marks)				

Subject: Physics

Year group: 13

Topic	Newtonian World and Astrophysics 1	Newtonian World and Astrophysics 2	Particles and Medical Physics 1	Particles and Medical Physics 2
Prior Knowledge	KS4 prior learning <ul style="list-style-type: none"> • CP2 Forces and Motion • CP12 Particle Model 	KS4 prior learning <ul style="list-style-type: none"> • CP2 Forces and Motion • SP7 Astronomy 	KS4 prior learning <ul style="list-style-type: none"> • CP6 Radioactivity • CP9 Electricity • CP10 Magnetism and Motor Effect • CP11 Electromagnetic Induction 	KS4 prior learning <ul style="list-style-type: none"> • CP6 Radioactivity • CP5 Light and the EM Spectrum
Knowledge	14 Thermal Physics <ul style="list-style-type: none"> • Temperature • Solid, liquid and gas • Thermal properties of materials 15 Ideal Gases <ul style="list-style-type: none"> • Ideal gases 16 Circular Motion <ul style="list-style-type: none"> • Circular motion • Centripetal force 17 Oscillations <ul style="list-style-type: none"> • Simple harmonic oscillations • Energy of a simple harmonic oscillator • Damping 	18 Gravitational Fields <ul style="list-style-type: none"> • Point and spherical masses • Newton's law of gravitation • Planetary motion • Gravitational potential and energy 19 Stars <ul style="list-style-type: none"> • Stars • Electromagnetic radiation from stars 20 Cosmology <ul style="list-style-type: none"> • Cosmology 	21 Capacitance <ul style="list-style-type: none"> • Capacitors • Energy stored by a capacitor • Charging and discharging capacitors 22 Electric Fields <ul style="list-style-type: none"> • Point and spherical charges • Coulomb's law • Uniform electric field 23 Magnetic Fields <ul style="list-style-type: none"> • Electric potential energy fields • Magnetic fields • Motion of charged particles • Electromagnetism 24 Particle Physics <ul style="list-style-type: none"> • The nuclear atom fields • Fundamental particles fields 	25 Radioactivity <ul style="list-style-type: none"> • Radioactivity fields 26 Nuclear Physics <ul style="list-style-type: none"> • Nuclear fission and fusion fields 27 Medical Physics <ul style="list-style-type: none"> • Using X rays • Diagnostic methods in medicine • Using ultrasound
Test Pattern	4 x interim tests (50 marks)	3 x interim tests (50 marks)	4 x interim tests (50 marks)	3 x interim tests (50 marks)
	End of year Exam (2 x 100 marks, 1x70 marks)			