

Year 12

Timing	Unit Title	Key Question	Knowledge		Assessing understanding
			Teacher 1	Teacher 2	
Autumn	Measurements and Errors and Materials Mechanics and Waves	What are the definitions? What is the key theory? Can I apply the theory in order to solve problems?	<ul style="list-style-type: none"> ● Hooke's Law series & parallel ● Energy in a spring ● Young's modulus: stress & strain Properties, F-x graphs ● Linear equations and vectors ● Resolving vectors, slopes ● PE, KE & Conservation ● Work-Energy ● Power, efficiency ● Displacement, velocity, acceleration, scalars ● Motion graphs ● SUVAT: 1D problems ● R P 3: Determination of g ● Projectiles ● Newton's Laws: Statics and acceleration ● Terminal Velocity ● Momentum & Impulse ● Momentum & Collisions ● Moments 	<ul style="list-style-type: none"> ● Measuring instruments ● Measuring circus ● Measurements & units ● SI units and prefixes ● Uncertainty 1 ● Uncertainty 2 ● Graphs & uncertainty ● RP4: Determination of Young's Modulus ● Wave Basics: Longitudinal + Transverse waves on a string/spring ● Interference & Superposition ● Stationary Waves: On a string and in pipes ● Higher harmonics ● RP 1: Stationary waves on a string ● EM waves ● Polarisation ● Refraction ● Fibre optics ● Diffraction Single slit ● Double Slit ● Diffraction Grating 	How understanding is assessed Students will be assessed on their ability to: <ul style="list-style-type: none"> ● recall the knowledge covered ● explain the Physical processes covered ● interpret graphical and experimental data ● plan and describe valid experiments ● evaluate experimental procedures and results. Skills <ul style="list-style-type: none"> ● Description ● Explanation ● Evaluation ● Comparison ● Planning and carrying out investigations ● Manipulating Mathematical Formulae Assessment point information Based on: <ul style="list-style-type: none"> ● summer homework ● home works during the term ● test on Mechanics ● test on Waves & Measurements.

	Electricity		<ul style="list-style-type: none"> ● Charge & Current ● Energy & Potential 	<ul style="list-style-type: none"> ● White Light Diffraction Patterns ● RP 2: Interference Effects 	
Spring	Electricity and the structure of atoms Unstable Nuclei Particle Theory	What are the definitions? What is the key theory? Can I apply the theory in order to solve problems?	<ul style="list-style-type: none"> ● Resistance ● Ohm's Law ● Ohm's Law Practical Skills ● Combinations of Resistors (ideal meters) ● EMF & Kirchoff's Laws ● Solving circuits ● Resistivity ● Microscopic resistance: Effect of temperature in metals ● Characteristic Curve of a filament bulb ● RP 5: Resistivity of a Wire ● Semiconductor devices Thermistor, LDR, LED, Diode ● Characteristic Curve of a Diode (LED) ● Internal Resistance ● RP 6: EMF and Internal Resistance ● Thermistor: how does Resistance change as Temperature is varied ● Cells in Series & Parallel ● Power in Circuits ● Potential Divider 	<ul style="list-style-type: none"> ● The atom, specific charge and isotopes ● Strong nuclear force ● Unstable nuclei and α and β decay ● $\alpha + \beta$ decay, importance of the neutrino ● Antiparticles ● pair production and annihilation ● The four fundamental interactions ● Exchange particles + Feynman Diagrams ● Introduction to exotic particles ● Baryons, mesons and leptons ● Conservation ideas ● Strange particles, production and decay ● Properties of quarks ● Quark combination of hadrons ● $\beta + \beta^-$ decay ● Photoelectric effect 	How understanding is assessed Students will be assessed on their ability to: <ul style="list-style-type: none"> ● recall the knowledge covered ● explain the Physical processes covered ● interpret graphical and experimental data ● plan and describe valid experiments ● evaluate experimental procedures and results. Skills <ul style="list-style-type: none"> ● Description ● Explanation ● Evaluation ● Comparison ● Planning and carrying out investigations ● Manipulating Mathematical Formulae Assessment point information Based on: <ul style="list-style-type: none"> ● home works during the term ● test on Materials and Electricity to date ● test on Particles to date.

