

Year 12

Timing	Unit Title	Key Question	Knowledge		Assessing understanding
			Teacher 1	Teacher 2	
Autumn	Measurements and Errors and Materials Mechanics and Waves Electricity	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 ● Charge & Current 	<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 	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.

			<ul style="list-style-type: none"> ● Energy & Potential 	<ul style="list-style-type: none"> ● Diffraction Grating ● White Light Diffraction Patterns ● RP 2: Interference Effects 	
Spring	<p>Electricity and the structure of atoms</p> <p>Unstable Nuclei</p> <p>Particle Theory</p>	<p>What are the definitions?</p> <p>What is the key theory?</p> <p>Can I apply the theory in order to solve problems?</p>	<ul style="list-style-type: none"> ● Resistance ● Ohm's Law ● Ohm's Law Practical Skills ● Combinations of Resistors (ideal meters) ● EMF & Kirchhoff'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 	<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 	<p>How understanding is assessed</p> <p>Students will be assessed on their ability to:</p> <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 <p>Skills</p> <ul style="list-style-type: none"> ● Description ● Explanation ● Evaluation ● Comparison ● Planning and carrying out investigations ● Manipulating Mathematical Formulae <p>Assessment point information</p> <p>Based on:</p> <ul style="list-style-type: none"> ● Home works during the term ● Test on Materials and Electricity to date ● Test on Particles to date.

			<ul style="list-style-type: none"> ● Power in Circuits ● Potential Divider 	<ul style="list-style-type: none"> ● β-β- decay ● Photoelectric effect ● Threshold Frequency and photon model ● Conclusion/ explanation of the photoelectric experiment ● Einstein's equation ● Spectra ● Excitation and de-excitation of electrons 	
Summer	<p>Electricity and Quantum Physics</p> <p>Year 2 Start of Course: Thermal Physics and Further Mechanics</p>	<p>What are the definitions?</p> <p>What is the key theory?</p> <p>Can I apply the theory in order to solve problems?</p>	<ul style="list-style-type: none"> ● Sensor circuits: potential divider + component ● Superconductivity ● Uniform Circular Motion ● Centripetal Acceleration ● Applications to Hills and Bends ● Applications to Swings ● Simple Harmonic Motion ● RP7: Pendulum and Mass spring system 	<ul style="list-style-type: none"> ● Further evidence of discrete energy levels ● De Broglie wavelength ● Electron diffraction ● Internal Energy and Temperature ● Specific Heat Capacity ● SHC Practical ● Specific Latent Heat ● Gas laws 	<p>How understanding is assessed</p> <p>Students will be assessed on their ability to:</p> <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 <p>Skills</p> <ul style="list-style-type: none"> ● Description ● Explanation ● Evaluation ● Comparison ● Planning and carrying out investigations ● Manipulating Mathematical Formulae <p>Assessment point information</p> <p>Based on:</p> <ul style="list-style-type: none"> ● Home works during the term ● Internal End of Course Exams

			●SHM and Circular Motion	● RP7: Pendulum and Mass spring system	
--	--	--	--------------------------	--	--