

Year 12

Timing	Unit Title	Key Question	Knowledge		Assessing understanding
			Teacher 1	Teacher 2	
Autumn	Measurements and Errors and Materials	What are the definitions?	<ul style="list-style-type: none"> • Hooke's Law series & parallel • Energy in a spring • Young's modulus: stress & strain Properties, F-x graphs 	<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 	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.
	Mechanics and Waves	What is the key theory?	<ul style="list-style-type: none"> • 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"> • 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 	
	Electricity	Can I apply the theory in order to solve problems?	<ul style="list-style-type: none"> • Charge & Current 		

			<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"> ●$\beta^+\beta^-$ 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	Electricity and Quantum Physics Year 2 Start of Course: Thermal Physics and Further Mechanics	<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 <ul style="list-style-type: none"> ●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 <ul style="list-style-type: none"> ●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	
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