

## Year 13

Timing	Unit Title	Key Question	Knowledge		Assessing understanding
			Teacher 1	Teacher 2	
Autumn	<b>Further Mechanics and Astrophysics</b>  <b>Kinetic Theory</b>  <b>Fields</b>  <b>Electric Fields</b>	<b>What are the definitions?</b>  <b>What is the key theory?</b>  <b>Can I apply the theory in order to solve problems?</b>	<ul style="list-style-type: none"> <li>Simple Harmonic Motion</li> <li>Pendulum</li> <li>Mass spring system</li> <li>Resonance and Stationary Waves</li> <li>RP6 EMF and Internal Resistance</li> <li>RP7 Pendulum and Mass Spring System</li> <li>Gravitational Fields</li> <li>Newton's Law of Gravity</li> <li>Gravitational Field strength</li> <li>Gravitational Potential</li> <li>Planetary Fields + Satellites</li> <li>Coulomb's Law</li> <li>Electric Field Patterns</li> <li>Electric Field Strength</li> <li>Electric Potential</li> </ul>	<ul style="list-style-type: none"> <li>RP8: Boyle's and Charles' Laws</li> <li>Derivation of the ideal gas Equation</li> <li>Temperature Kinetic Energy relationship</li> <li>Optical Telescopes</li> <li>Single dish radio telescopes</li> <li>Large diameter telescopes and resolution</li> <li>Comparison of Eye and CCD</li> <li>Luminosity, Magnitude and apparent Magnitude</li> <li>Classification by Magnitude</li> <li>Black Body Radiation, Wien's Law, Stefan's Law</li> <li>Classifications by Temperature.</li> <li>Stellar Spectral Classes</li> </ul>	<b>How understanding is assessed</b> Students will be assessed on their ability to: <ul style="list-style-type: none"> <li>Recall the knowledge covered</li> <li>Explain the Physical processes covered.</li> <li>Interpret graphical and experimental data</li> <li>Plan and describe valid experiments</li> <li>Evaluate experimental procedures and results</li> </ul> <b>Skills</b> <ul style="list-style-type: none"> <li>Description</li> <li>Explanation</li> <li>Evaluation</li> <li>Comparison</li> <li>Planning and carrying out investigations</li> <li>Manipulating Mathematical Formulae</li> </ul> <b>Assessment point information</b> Based on: <ul style="list-style-type: none"> <li>Home works during the term</li> <li>Test on Astrophysics</li> <li>Test on Further Mechanics</li> </ul>

	<b>Magnetic Fields and Radioactivity</b>		<ul style="list-style-type: none"> <li>• Point sources vs. Plates</li> <li>• Capacitance</li> <li>• Dielectric Equation</li> <li>• Energy Stored in a capacitor</li> <li>• Charging and Discharging</li> <li>• RP9 (Capacitor Charge/ Discharge)</li> <li>• Magnetic Fields</li> </ul>	<ul style="list-style-type: none"> <li>• HR Diagrams</li> <li>• Star Lifecycles</li> <li>• Neutron stars and Blackholes</li> <li>• Doppler effect and Red Shift</li> <li>• Hubble's Law/ CMBR/Dark Matter</li> <li>• Quasars</li> <li>• Exoplanets</li> </ul>	
Spring	<b>EM Induction</b>  <b>Nuclear Physics</b>	<p><b>What are the definitions?</b></p> <p><b>What is the key theory?</b></p> <p><b>Can I apply the theory in order to solve problems?</b></p>	<ul style="list-style-type: none"> <li>• RP:10 Force exerted by current carrying conductor</li> <li>• BIL and BeV</li> <li>• Flux + Flux Linkage</li> <li>• Hall Probe</li> <li>• EM Induction</li> <li>• AC Generator and AC</li> <li>• Oscilloscopes</li> <li>• Transformer</li> <li>• RP:11 (Hall probe/ Search Coil)</li> </ul>	<ul style="list-style-type: none"> <li>• Rutherford Scattering</li> <li>• Radioactivity Introduction</li> <li>• Alpha, Beta and Gamma radiation</li> <li>• Half value thickness exp.</li> <li>• Inverse Square Law</li> <li>• Radioactive Decay</li> <li>• Half Life</li> <li>• Half life practical</li> <li>• Applications of Radioactivity</li> <li>• R P:12 Inverse Square Law of Gamma rays</li> <li>• Segre Plot</li> </ul>	<p><b>How understanding is assessed</b></p> <p>Students will be assessed on their ability to:</p> <ul style="list-style-type: none"> <li>• Recall the knowledge covered</li> <li>• Explain the Physical processes covered.</li> <li>• Interpret graphical and experimental data</li> <li>• Plan and describe valid experiments</li> <li>• Evaluate experimental procedures and results</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Description</li> <li>• Explanation</li> <li>• Evaluation</li> <li>• Comparison</li> <li>• Planning and carrying out investigations</li> <li>• Manipulating Mathematical Formulae</li> </ul> <p><b>Assessment point information</b></p> <p>Based on:</p> <ul style="list-style-type: none"> <li>• Home works during the term</li> <li>• Mocks on all topics covered so far</li> <li>• Test on Thermal Physics and Radioactivity tbc</li> </ul>

				<ul style="list-style-type: none"> <li>Decay modes and Decay Series</li> <li>Nuclear Radius</li> <li>Electron Diffraction</li> <li>Nuclear Density</li> <li>Binding Energy per nucleon</li> <li>Fission + Calculations</li> </ul>	<ul style="list-style-type: none"> <li>Test on Capacitance and electric fields tbc</li> </ul>
Summer	<b>Nuclear Physics</b>	<p><b>What are the definitions?</b></p> <p><b>What is the key theory?</b></p> <p><b>Can I apply the theory in order to solve problems?</b></p>	Revision	<ul style="list-style-type: none"> <li>Fission Power Station</li> <li>Fusion</li> <li>Safety in Power Stations</li> <li>Nuclear Waste Disposal</li> </ul>	<p><b>How understanding is assessed</b></p> <p>Students will be assessed on their ability to:</p> <ul style="list-style-type: none"> <li>Recall the knowledge covered</li> <li>Explain the Physical processes covered.</li> <li>Interpret graphical and experimental data</li> <li>Plan and describe valid experiments</li> <li>Evaluate experimental procedures and results</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Description</li> <li>Explanation</li> <li>Evaluation</li> <li>Comparison</li> <li>Planning and carrying out investigations</li> <li>Manipulating Mathematical Formulae</li> </ul> <p><b>Assessment point information</b></p> <p>Based on:</p> <ul style="list-style-type: none"> <li>Possible mini mock</li> <li>A Level Exams</li> </ul>