

|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                           |                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                               |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Year 10:<br/>Physics<br/>Combined</b> | <b>Curriculum Intent:</b> Year 10 Physics tackles more complex ideas and concepts in the subject. It builds on the key knowledge from years 7,8 and 9 to link together all the areas of the subject. The key areas of Forces, Electricity, Energy and the impact of these ideas on the wider world are developed through more challenging topics such as series and parallel circuits, Newton's laws, energy and energy transfers. Knowledge of the important mathematical relationships is consolidated further, and application of these equations is developed throughout. Procedural knowledge and practical skills are developed further, building on experience working practically with forces, electricity and energy. The curriculum in year 10 aims to allow students to extend their understanding of the Physics aspect of the Combined Science course. |                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                           |                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                               |
|                                          | <b>Autumn 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Autumn 2</b>                                                                                                                                                                                                                                                                                                                                                                                              | <b>Spring 1</b>                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Spring 2</b>                                                                                                                                           | <b>Summer 1</b>                                                                                                                                                                                                                              | <b>Summer 2</b>                                                                                                                                                                                                                                                                               |
| <b>Sequence of Learning</b>              | <b>P2.1 - Motion</b> <ul style="list-style-type: none"> <li>Speed</li> <li>Acceleration</li> <li>Vectors &amp; scalars</li> <li>Distance -time graphs</li> <li>Velocity – time graphs</li> </ul> <b>P2.2 - Forces</b> <ul style="list-style-type: none"> <li>Newton's laws</li> <li>Free body diagrams</li> <li>Forces</li> <li>Momentum</li> <li>Work and power</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>P2.3 - Stretching materials</b> <ul style="list-style-type: none"> <li>Hooke's law</li> <li>Energy stored in springs and other materials</li> <li>Weight and GPE</li> </ul> <b>P3.1 &amp; 3.2 - charge &amp; circuits</b> <ul style="list-style-type: none"> <li>Static electricity</li> <li>Electric Current</li> <li>Circuits and potential difference</li> <li>Series and parallel circuits</li> </ul> | <b>P3.2 - circuits (cont.)</b> <ul style="list-style-type: none"> <li>Resistance</li> <li>Circuit resistance</li> <li>I-V graphs</li> <li>LDRs and thermistors</li> <li>Sensing circuits</li> <li>Electrical power</li> </ul> <b>P3.3 - magnetism</b> <ul style="list-style-type: none"> <li>Magnetism</li> <li>Fields around a wire</li> <li>Force around a current carrying wire</li> <li>Electric motors</li> </ul> | <b>P5 - energy</b> <ul style="list-style-type: none"> <li>Energy stores &amp; transfers</li> <li>Energy analysis</li> </ul> <b>Revision for PPE exams</b> | <b>PPE exams and review</b><br><br><b>P5 – energy (Cont.)</b> <ul style="list-style-type: none"> <li>Work done in braking a car</li> <li>Energy transfers</li> <li>Paying for electricity</li> <li>Insulation</li> <li>Efficiency</li> </ul> | <b>P6 – Global Challenges</b> <ul style="list-style-type: none"> <li>Measuring motion</li> <li>Forces in collisions</li> <li>Stopping distance</li> <li>Energy sources and resources</li> <li>National grid</li> <li>Mains electricity</li> </ul><br><br><b>Recapping of Modules P1 to P3</b> |
| <b>Vocabulary</b>                        | <ul style="list-style-type: none"> <li>Speed</li> <li>Velocity</li> <li>Distance</li> <li>Displacement</li> <li>Acceleration</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>Elastic</li> <li>Plastic</li> <li>Deformation</li> <li>Hooke's Law</li> <li>Weight</li> </ul>                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>LDR</li> <li>Thermistor</li> <li>LED</li> <li>Power supplied</li> <li>Power dissipated</li> </ul>                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>Kinetic</li> <li>Gravitational</li> <li>Thermal</li> <li>Chemical</li> <li>Magnetic</li> </ul>                     | <ul style="list-style-type: none"> <li>Thermal Conductivity</li> <li>Cavity Wall Insulation</li> <li>Sankey Diagram</li> <li>Efficiency</li> </ul>                                                                                           | <ul style="list-style-type: none"> <li>Thinking Distance</li> <li>Braking Distance</li> <li>Stopping Distance</li> <li>Transformers</li> <li>Renewable</li> </ul>                                                                                                                             |

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                          |                                                                                                         |                                                                                                                                                                                                                      |                                                                                                                                                                                                                                         |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | <ul style="list-style-type: none"> <li>• Deceleration</li> <li>• Vectors</li> <li>• Scalars</li> <li>• Reaction</li> <li>• Friction</li> <li>• Tension</li> <li>• Upthrust</li> <li>• Weight</li> <li>• Resultant</li> <li>• Uniform Motion</li> </ul>                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>• Ammeter</li> <li>• Voltmeter</li> <li>• Current</li> <li>• Potential Difference</li> <li>• Resistance</li> <li>• Ohm, Amps. Volts. Watts</li> </ul>                                                                                                                                                         | <ul style="list-style-type: none"> <li>• Magnetic Field</li> <li>• Poles</li> <li>• Attraction</li> <li>• Repulsion</li> <li>• Motor Effect</li> <li>• Flemings Left Hand Rule</li> <li>• Split Ring Commutator</li> </ul>                               | <ul style="list-style-type: none"> <li>• Electrostatic</li> <li>• Nuclear</li> <li>• Elastic</li> </ul> | <ul style="list-style-type: none"> <li>• Work Done</li> <li>• Current</li> <li>• Heating</li> <li>• Insulation</li> </ul>                                                                                            |                                                                                                                                                                                                                                         |
| Key Questions | <ul style="list-style-type: none"> <li>• How do we calculate and measure speed and acceleration?</li> <li>• What are vectors and scalars?</li> <li>• How can we interpret distance-time and velocity-time graphs?</li> <li>• How do forces arise and what are their effects?</li> <li>• How can we show how forces interact with an object?</li> <li>• What are Newton's laws?</li> <li>• How do we apply physics to describe the motion of an object?</li> </ul> | <ul style="list-style-type: none"> <li>• What properties do materials have when stretched?</li> <li>• What is the difference between mass and weight?</li> <li>• What is electric charge?</li> <li>• What happens in an electric circuit?</li> <li>• What happens in an electric circuit?</li> <li>• What affects a circuit's properties?</li> </ul> | <ul style="list-style-type: none"> <li>• How can we use sensors in electrical circuits?</li> <li>• How can we demonstrate and explain magnetism?</li> <li>• How can we create a magnet using current?</li> <li>• How do electric motors work?</li> </ul> | <ul style="list-style-type: none"> <li>• What is energy?</li> </ul>                                     | <ul style="list-style-type: none"> <li>• How can we calculate energy changes, transfers and measure the efficiency?</li> <li>• How do we reduce energy loss?</li> <li>• Why is the planet getting hotter?</li> </ul> | <ul style="list-style-type: none"> <li>• What factors affect how quickly a car stops?</li> <li>• How does electricity get transmitted to our homes?</li> <li>• What sources of energy do we use and how long will they last?</li> </ul> |

|                  |                                                                                                                                                                                               |                                                                                                                 |                                                                                                                   |                                                                                   |                                                                                                                                                            |                                                                                                      |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
|                  | <ul style="list-style-type: none"> <li>• What happens in collisions?</li> </ul>                                                                                                               |                                                                                                                 |                                                                                                                   |                                                                                   |                                                                                                                                                            |                                                                                                      |
| Practical Skills | <ul style="list-style-type: none"> <li>• Measuring speed</li> <li>• Measuring changes in velocity</li> <li>• Effects of unbalanced forces</li> <li>• Verifying Newton's second law</li> </ul> | <ul style="list-style-type: none"> <li>• Investigating Hooke's Law</li> <li>• Investigating circuits</li> </ul> | <ul style="list-style-type: none"> <li>• Investigating thermistors and LDRs</li> <li>• Plotting fields</li> </ul> | <ul style="list-style-type: none"> <li>• Investigating GPE, KE and EPE</li> </ul> | <ul style="list-style-type: none"> <li>• Determining the Specific heat capacity of water</li> <li>• Heating investigation</li> <li>• Insulation</li> </ul> | <ul style="list-style-type: none"> <li>• Measuring reaction time</li> <li>• Wiring a plug</li> </ul> |