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| <div>Year 10:</div> <div>Physics</div> <div>Separate</div> | <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 and the National Grid. 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 extend and deepen the understanding of Physics at GCSE. |                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                        |                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                     |
|                                                            | Autumn 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Autumn 2                                                                                                                                                                                                                       | Spring 1                                                                                                                                                                                                                                                                                                                      | Spring 2                                                                                                                                                                                               | Summer 1                                                                                                                                                                                                                          | Summer 2                                                                                                                                                                                                                                                            |
| Sequence of Learning -                                     | <b>P2.3 - forces in action</b> <ul style="list-style-type: none"><li>• Hooke’s law</li><li>• Energy stored in springs and other materials</li><li>• GPE and weight</li><li>• Turning forces</li><li>• Simple machines</li><li>• Hydraulics</li></ul> <b>P1.3 - Pressure</b> <ul style="list-style-type: none"><li>• Gas pressure and temperature</li><li>• Gas pressure and volume</li><li>• Pressure in liquids</li><li>• Floating and sinking</li></ul>                                                                                                                                                                                                                                                                                                                                                                                      | <b>P3.1 &amp; 3.2 - Charge and circuits</b> <ul style="list-style-type: none"><li>• Electrostatics</li><li>• Electric current</li><li>• Circuits and pd</li><li>• Comparing circuits</li><li>• Electrical resistance</li></ul> | <b>P 3.2 - Circuits (contd)</b> <ul style="list-style-type: none"><li>• I/V graphs</li><li>• LDR</li><li>• Thermistor</li><li>• Kirchhoff’s laws</li><li>• Sensing circuits</li><li>• Electrical power</li></ul> <b>P7 – energy</b> <ul style="list-style-type: none"><li>• Energy stores</li><li>• Energy analysis</li></ul> | <b>P5 – energy (Cont.)</b> <ul style="list-style-type: none"><li>• Energy transfers</li><li>• Paying for electricity</li><li>• Insulation</li><li>• Efficiency</li></ul> <b>Revision for PPE exams</b> | <b>PPE exams and review</b><br><b>P8 - 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></ul> | <b>P8 - Global Challenges</b> <ul style="list-style-type: none"><li>• National grid</li><li>• Mains electricity</li><li>• The big bang and stars</li><li>• Satellites and orbits</li><li>• Radiation and temperature</li><li>• The structure of the earth</li></ul> |

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| Vocabulary    | <ul style="list-style-type: none"> <li>Elastic</li> <li>Plastic</li> <li>Deformation</li> <li>Hooke's Law</li> <li>Weight</li> <li>Upthrust</li> <li>Moments</li> <li>Hydraulic</li> </ul> | <ul style="list-style-type: none"> <li>Ammeter</li> <li>Voltmeter</li> <li>Charge</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>LDR</li> <li>Thermistor</li> <li>LED</li> <li>Power supplied</li> <li>Power dissipated</li> <li>Kinetic</li> <li>Gravitational</li> <li>Thermal</li> <li>Chemical</li> <li>Magnetic</li> <li>Electrostatic</li> <li>Nuclear</li> <li>Elastic</li> </ul> | <ul style="list-style-type: none"> <li>Thermal conductivity</li> <li>Cavity wall insulation</li> <li>Sankey Diagram</li> <li>Efficiency</li> <li>Work done</li> <li>Current</li> <li>Heating</li> <li>Insulation</li> </ul> | <ul style="list-style-type: none"> <li>Thinking distance</li> <li>Braking distance</li> <li>Stopping distance</li> </ul> | <ul style="list-style-type: none"> <li>Transformers</li> <li>Renewable</li> <li>Doppler Effect</li> <li>CMBR</li> <li>Red Shift</li> <li>Hubble's Law</li> <li>Satellite</li> <li>Asteroid</li> <li>Main Sequence Star</li> <li>Nebula</li> <li>Red Giant</li> <li>Red Supergiant</li> <li>Supernova</li> <li>Planetary Nebula</li> <li>White Dwarf</li> <li>Neutron Star</li> <li>Black Hole</li> <li>Crust</li> <li>Core</li> <li>Mantle</li> <li>Seismic wave</li> <li>Seismometers</li> </ul> |
| Key questions | <ul style="list-style-type: none"> <li>What properties do materials have when stretched?</li> <li>What is the difference</li> </ul>                                                        | <ul style="list-style-type: none"> <li>What is electric charge?</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 control circuits?</li> <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> </ul>                                                                                                | <ul style="list-style-type: none"> <li>What factors affect how quickly a car stops?</li> </ul>                           | <ul style="list-style-type: none"> <li>How does electricity get transmitted to our homes?</li> <li>What sources of energy do we use</li> </ul>                                                                                                                                                                                                                                                                                                                                                    |

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|                  | <p>between mass and weight?</p> <ul style="list-style-type: none"> <li>• What is a moment?</li> <li>• How do gasses and liquids exert pressure?</li> <li>• How can forces be transferred by liquids?</li> </ul> |                                                                            |                                                                                                                                | <ul style="list-style-type: none"> <li>• How do we reduce energy loss?</li> <li>• Why is the planet getting hotter?</li> </ul> |                                                                             | <p>and how long will they last?</p> <ul style="list-style-type: none"> <li>• What is the structure of the universe?</li> <li>• What objects make up the solar system?</li> <li>• What are the life cycles of different stars?</li> <li>• How can astronomy help us determine the age and the ongoing evolution of the universe?</li> <li>• What is the relationship between temperature and colour?</li> <li>• How can wave properties reveal the internal structure of the Earth?</li> </ul> |
| Practical Skills | <ul style="list-style-type: none"> <li>• Investigating Hooke's Law</li> <li>• Balancing investigations</li> </ul>                                                                                               | <ul style="list-style-type: none"> <li>• Investigating circuits</li> </ul> | <ul style="list-style-type: none"> <li>• Investigating thermistors and LDRs</li> <li>• Investigating GPE KE and EPE</li> </ul> | <ul style="list-style-type: none"> <li>• Determining the Specific heat capacity of water</li> </ul>                            | <ul style="list-style-type: none"> <li>• Measuring reaction time</li> </ul> | <ul style="list-style-type: none"> <li>• Wiring a plug</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                             |

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|  | <ul style="list-style-type: none"><li>Investigating floating objects</li></ul> |  |  | <ul style="list-style-type: none"><li>Heating investigation</li><li>Insulation</li></ul> |  |  |
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