

# Year 11: Physics Separate Science

**Curriculum Intent:** Year 11 Separate Physics builds on the foundations established in the Combined Science course. The more complex topics include electromagnetic induction, pressure laws and the Big Bang theory. The knowledge gained from the course provides students with a deeper insight into the subject, allowing them to tackle more complex problems and questions which link different areas. It also builds a solid knowledge base for progression to A-level Physics. Practical skills may include building and testing a model boat, testing levers, making a loudspeaker and a transformer.



	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1
<b>Key ideas and sequence of learning</b>	<p><b>Module P1- Matter</b></p> <ul style="list-style-type: none"> <li>• Pressure and volume</li> <li>• Atmospheric pressure</li> <li>• Liquid pressure</li> <li>• Floating and sinking</li> </ul> <p><b>Module P4 - Magnetism</b></p> <ul style="list-style-type: none"> <li>• Electromagnetic induction</li> <li>• Generators</li> <li>• Transformers</li> <li>• Microphones and speakers</li> </ul>	<p><b>Module P6 - Radioactivity</b></p> <ul style="list-style-type: none"> <li>• Radiation &amp; the human body</li> <li>• Nuclear Fusion and Fission</li> </ul> <p><b>Module P8 – global challenges</b></p> <ul style="list-style-type: none"> <li>• The Big Bang</li> <li>• Our solar system</li> <li>• Satellites and orbits</li> <li>• Radiation and temperature</li> <li>• Inside our planet</li> </ul> <p><b>Module P2 - forces</b></p> <ul style="list-style-type: none"> <li>• Turning forces</li> <li>• Simple machines</li> <li>• Hydraulics</li> </ul>	Revision and consolidation	Revision and consolidation  Students begin their GCSE exams	Students finish their GCSE exams
<b>Key Questions</b>	<ol style="list-style-type: none"> <li>1. What rules of pressure do fluids obey?</li> <li>2. What is atmospheric pressure?</li> <li>3. How can we predict whether an object will float or sink?</li> <li>4. What is electromagnetic induction?</li> <li>5. How do generators, transformers and microphones work</li> </ol>	<ol style="list-style-type: none"> <li>1. How is radiation used in medicine?</li> <li>2. How is energy released from nuclei?</li> <li>3. What is red shift and how does it support the big bang theory?</li> <li>4. What is in our solar system and what is the life cycle of stars</li> <li>5. What types of orbits are satellites in?</li> <li>6. Why do hotter things emit more radiation than cooler ones?</li> </ol>	<ol style="list-style-type: none"> <li>1. Which content am I insecure on?</li> <li>2. How can I improve my exam technique?</li> </ol> <p>Students will review their PPE exam papers in detail to identify strengths and weaknesses</p> <p>Students will then prepare for their GCSE exams in lessons with their teacher.</p>	Students will prepare for their GCSE exams in lessons with their teacher.	

		<p>7. How do we know the structure of the Earth?</p> <p>8. What is the principle of moments?</p> <p>9. How can simple machines provide a mechanical advantage?</p> <p>Students sit their PPE exams</p>	They will also have lectures for each module.		
<b>Vocabulary</b>	<ul style="list-style-type: none"> <li>• Inversely proportional</li> <li>• Atmospheric pressure</li> <li>• Liquid pressure</li> <li>• Upthrust</li> <li>• Electromagnetic induction</li> <li>• Induced potential difference</li> <li>• Alternating potential difference</li> <li>• Alternator</li> <li>• Slip rings</li> <li>• Transformer</li> <li>• step-up</li> <li>• Step-down</li> <li>• Microphone</li> <li>• Diaphragm</li> <li>• Loudspeaker</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Fusion and fission</li> <li>• Chain reaction</li> <li>• Red-shift</li> <li>• Big Bang Theory</li> <li>• Cosmic microwave Background radiation</li> <li>• Planets</li> <li>• Moons</li> <li>• Minor planets</li> <li>• Main sequence star</li> <li>• Natural satellites</li> <li>• Geostationary orbit</li> <li>• Polar orbit</li> <li>• Mantle</li> <li>• Outer and inner core</li> <li>• Seismic waves</li> <li>• Seismometers</li> <li>• P-waves and S-waves</li> <li>• Moment</li> <li>• Effort and Load</li> <li>• Mechanical advantage</li> <li>• Hydraulic</li> </ul>			
<b>Practical Skills</b>	<ul style="list-style-type: none"> <li>• Crushing cans</li> <li>• Floating a boat investigation</li> <li>• Making a loudspeaker</li> <li>• Making a transformer</li> </ul>	<ul style="list-style-type: none"> <li>• Using levers and balances to confirm calculated moments</li> </ul>			