


Year 11: Separate Biology	Curriculum Intent: Year 11 Separate Biology looks to build on the foundation established in the Combined Science course. The more complex topics covered include. The knowledge gained 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 include				
	Topic 1	Topic 2 Forces in Action	Topic 3 Uses of Magnetism	Topic 4 Waves in Matter	Topic 5 Beyond Earth
Key ideas	Pressure and volume Atmospheric pressure Liquid pressure Floating and sinking	Turning forces Simple machines Hydraulics	Electromagnetic induction Generators Transformers	Sound properties and their uses Sound in solids and the ear EM waves and matter Lenses Light and colour	The big bang Our solar system Satellites and orbits Radiation and temperature Inside our planet
Sequence of Learning -Key Questions	<ol style="list-style-type: none"> 1. How are pressure and volume of a gas related quantitatively? 2. What causes atmospheric pressure and how does it vary with altitude? 3. How does pressure vary with depth in a liquid? 4. How can we predict whether an object will float or sink? 	<ol style="list-style-type: none"> 1. How can the principle of moments help us calculate forces? 2. How do levers and gears transmit forces? 3. How can we determine the forces in a hydraulic system? 	<ol style="list-style-type: none"> 1. What is electromagnetic induction and in what direction does it act? 2. How do alternators and dynamos work? 3. How do the number of coils on transformers affect their output voltages? 4. How do microphones and loudspeakers work? 	<ol style="list-style-type: none"> 1. What happens to sound waves at boundaries? 2. How does the ear work? 3. How can we image the body with EM waves? 4. How do EM waves interact with matter? 5. How do lenses make the eye work? 6. How can we explain the colours we see? 	<ol style="list-style-type: none"> 1. What is red shift and how does it support the big bang theory? 2. How is the universe changing? 3. What types of orbits are satellites in? 4. Why do hotter things emit more radiation than cooler ones? 5. How do we know the structure of the Earth?

<p style="text-align: center;">Vocabulary</p>	<p>Inversely proportional Atmospheric pressure Liquid pressure upthrust</p>	<p>pivot moment principle of moments effort load mechanical advantage Hydraulic machine</p>	<p>Electromagnetic induction Induced potential difference Alternating potential difference Alternator Slip rings Transformer step-up Step-down Microphone Diaphragm Compressions Rarefactions Carbon microphone Loudspeaker frequency</p>	<p>Refraction Normal Echo Echo-sounding Sonar Ossicles Amplify Oval window Natural frequency Resonance Electromagnetic spectrum Visible light Vacuum Sources Microwave Infrared Absorbers Thermal imaging camera Thermogram CCD Computerised tomography Ray diagrams Convex Concave Focal length Short sight Long sight Real image Virtual image Prism Dispersion Spectral colours Perceived colour Specular reflection Diffuse reflection</p>	<p>Red-shift Big Bang Theory Cosmic microwave background radiation Planets Moons Minor planets Asteroid belt Main sequence star Lifecycle Natural satellites Artificial satellites Geostationary orbit Polar orbit Crust Mantle Outer core Inner core Seismic waves Seismometers P-waves S-waves</p>
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<p>Practical Skills</p>	<p>Crushing cans Floating a boat investigation</p>	<p>Using levers and balances to confirm calculated moments</p>	<p>Making a loudspeaker Generating pds</p>	<p>Investigating reflection, refraction and lenses Looking at medical images and making diagnoses</p>	<p>Investigating orbital speeds</p>
<p>Assessment (Related to mastery grids)</p>	<p>AO1 – core knowledge check AO1 - Tassomai AO2 – applying knowledge – exam style questions</p>	<p>AO1 – core knowledge check AO1 - Tassomai AO2 – applying knowledge – exam style questions</p>	<p>AO1 – core knowledge check AO1 - Tassomai AO2 – applying knowledge – exam style questions</p>	<p>AO1 – core knowledge check AO1 - Tassomai AO2 – applying knowledge – exam style questions</p>	<p>AO1 – core knowledge check AO1 - Tassomai AO2 – applying knowledge – exam style questions</p>