



# Year 13: Physics

**Curriculum Intent:** Students follow the two-year OCR A-Level (A) Physics specification. Students build on their knowledge from Year 12 and develop their mathematical skills throughout the course. Pupils study Module 5 and 6 of the OCR specification before taking their external examinations. Learning is supported by practical work and students will complete approximately 6 practical assessments (PAGs) during the year which count towards their final qualification. Students are taught by 2 teachers

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Key ideas</b>	<b>Module 5</b> <ul style="list-style-type: none"> <li>• Circular motion</li> <li>• Simple harmonic motion</li> <li>• Gravitational fields</li> <li>• Properties of stars</li> <li>• Cosmology</li> </ul>	<b>Module 6</b> <ul style="list-style-type: none"> <li>• Capacitors</li> <li>• Electric fields</li> <li>• Electromagnetism</li> </ul>	<b>Module 6</b> <ul style="list-style-type: none"> <li>• Electromagnetism</li> <li>• Particle Physics</li> <li>• Radioactivity</li> </ul>	<b>Module 6</b> <ul style="list-style-type: none"> <li>• Nuclear energy</li> <li>• Medical imaging</li> </ul>	<b>Revision</b>	
<b>Sequence of Learning (taught by 2 teachers)</b>	<b>Module 5</b> <ul style="list-style-type: none"> <li>• Centripetal forces</li> <li>• Simple harmonic motion (SHM)– kinematics of an oscillating system</li> <li>• SHM –energy of an oscillating system</li> <li>• Damping &amp; resonance</li> <li>• Gravitational fields and forces</li> <li>• Gravitational potential and potential energy</li> <li>• Life cycle of stars</li> <li>• Radiation from stars</li> <li>• Wien’s &amp; Stefan’s law</li> <li>• Astronomical distances</li> <li>• Red shift and Hubble’s law</li> <li>• The Big Bang</li> </ul>	<b>Module 6</b> <ul style="list-style-type: none"> <li>• Capacitors and <math>Q=CV</math></li> <li>• Capacitors in circuits</li> <li>• Energy stored in capacitors</li> <li>• Charging and discharging capacitors</li> <li>• Electric fields and Coulombs law</li> <li>• Electric potential energy</li> <li>• Magnetic fields</li> <li>• Currents in magnetic fields</li> <li>• Charged particles in magnetic fields</li> </ul>	<b>Module 6</b> <ul style="list-style-type: none"> <li>• Electromagnetic induction</li> <li>• Faraday and Lenz’s law</li> <li>• Transformers</li> <li>• The nucleus</li> <li>• Fundamental particles</li> <li>• Radioactive decay</li> <li>• Half-life and activity</li> </ul>	<b>Module 6</b> <ul style="list-style-type: none"> <li>• Binding energy and <math>E=mc^2</math></li> <li>• Nuclear fission and nuclear fusion</li> <li>• X Rays and their uses in medical imaging</li> <li>• Gamma cameras and PET scans</li> <li>• Ultrasound and its use in medical imaging</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils will undertake a period of revision in lessons for their external examinations</li> <li>• A – level examinations begin</li> </ul>	<ul style="list-style-type: none"> <li>• A - level examinations</li> </ul>

<b>Vocabulary</b>	The list of key words is too numerous for inclusion here. The recommended course textbook provides a complete Glossary of key words					
<b>Practical Skills (relevant PAGs)</b>	<ul style="list-style-type: none"> <li>• PAG 10.1- simple harmonic motion</li> <li>• PAG 10.3 -static and dynamic methods to find a spring constant</li> </ul>	<ul style="list-style-type: none"> <li>• PAG 9.1 charging and discharging capacitors</li> <li>• PAG 9.2 capacitors in series and parallel</li> </ul>	<ul style="list-style-type: none"> <li>• PAG 7.1 – random nature of radioactive decay</li> <li>• PAG 11.3 – strength of a magnet</li> </ul>			