

# A level Physics Course Guide February 2022

**Notes:**

- **Module 1 Practical skills in Physics:** This is taught throughout the course alongside the practical work in each module.
- The following shows the term in which the majority of each module is taught.

<b>Year 12</b>	
<b>Term One</b>	<p><b>2 Foundations of physics</b> The aim of this module is to introduce important conventions and ideas that permeate the fabric of physics. Understanding of physical quantities, S.I. units, scalars and vectors helps physicists to effectively communicate their ideas within the scientific community. This is an essential building block to the rest of the course.</p> <p><b>3.1 Motion</b> This topic builds on KS4 and KS3 knowledge, is very visual and is therefore easy for students to access making it a great choice for a transition topic from GCSE to A level work. It provides opportunities for practical work and it is required knowledge for the Forces module and others that are taught later. A PAG on Motion is completed during this module.</p> <p><b>3.2 Forces</b> This topic builds on both module 2 and module 3.1 concepts. Practical work continues throughout the module enabling module 1 skills to be taught.</p> <p><b>3.3 Work Energy Power</b> This topic builds on Modules 3.1 and 3.2 by looking at similar problems from an energy perspective.</p> <p><b>3.4 Materials</b> This topic builds on both Modules 3.2 and 3.3 as materials are subjected to forces and can store energy! A PAG on materials is completed during this module.</p> <p><b>4.1 Electricity</b> The electricity topics (4.1, 4.2 and 4.3) are taught consecutively since the later modules rely on the concepts such as current and charge developed in the earlier modules.</p>
<b>Term Two</b>	<p><b>4.2 and 4.3 Electricity</b> These modules are taught one after the other and follow on from 4.1. They build on KS4 knowledge but are more theoretical therefore they are taught not at the beginning of Year 12. Two PAGs are completed during this topic continuing to develop practical skills (module 1)</p> <p><b>3.5 Newton's laws of motion</b> This module builds on Modules 3.1, 3.2 and 3.3. This module brings together Motion, Forces and Energy in various situations.</p> <p><b>4.4 Waves</b> This topic builds on 3.1 and 3.3. The 4.4 waves topic is taught before 4.5 Quantum Physics, which deals with concepts such as wave-particle duality and electron diffraction so requires understanding of these concepts.</p> <p><b>4.5 Quantum Physics</b> This builds on 4.4 and is also required before the later module, 6.4, on nuclear and particle physics.</p>
<b>Term Three</b>	<p><b>PAG 12.1</b> This research and presentation PAG task builds on the theory of 3.4 Materials.</p> <p><b>5.2 Circular Motion</b> This builds on concepts arising in 3.1 Motion and 3.2 Forces and needs to be done before later modules including 5.3 Oscillations, 5.4 Gravitational Fields and 6.3 Electromagnetism.</p> <p><b>5.3 Oscillations.</b> This builds on 4.4 Waves, including concepts such as frequency and period, and 5.2 Circular Motion.</p> <p><b>6.2 Electric fields</b> This builds on 4.1, 4.2, and 4.3. It links with 6.1 and is necessary for 6.3 and 6.5.</p>

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<b>Year 13</b>	
<b>Term One</b>	<p><b>6.1 Capacitors.</b> This builds on 4.1, 4.2, and 4.3 since the module is concerned with an electrical component and involves circuit diagrams. It requires understanding developed in the electricity modules including electrical concepts such as potential difference and electric charge. It links closely with 6.2 so these modules are taught consecutively.</p> <p><b>5.4 Gravitational Fields</b> This builds 3.2 and 5.2. This needs to be done before 5.5 Astrophysics so that gravitational force involved in the life cycle of stars can be considered.</p> <p><b>5.1 Thermal Physics</b> This builds on 3.2 concepts, including pressure, as well as momentum studied in 3.5.</p> <p><b>5.5 Astrophysics</b> This builds on 4.4 concepts, including the diffraction grating, as well as 4.5 (<math>E = hf</math>) and 5.4.</p>
<b>Term Two</b>	<p><b>6.4 Nuclear and Particle Physics</b> This builds on concepts in 6.2 (such as forces in the nucleus as well as identifying the type of radiation). It links with 5.5 (fusion).</p> <p><b>6.3 Electromagnetism</b> This builds on electricity concepts in 4.1, 4.2, 4.3 as well as 5.2 (circular motion of charged particles in a magnetic field) and 6.2.</p> <p><b>6.5 Medical Imaging</b> This module is taught near to the end of the course since it relies on understanding developed in several earlier modules. It builds on 4.4, 4.5, 6.2 and 6.4. It links with 5.5 (Doppler effect).</p>
<b>Term Three</b>	<p><b>Revision</b></p>