

Landau Learner Curriculum Overview

Subject: Physics

Director of Learning: RE/EMQ

Year: 12

Curriculum organisation				
Students are taught based on 10 sessions per fortnight. Students follow the OCR A Physics AS/A level specification, resulting in either an AS level in Physics after 1 year or an A level in Physics after 2 years.				
What topics will students be studying this year? Includes links to National Curriculum, Curriculum Intent and Prior Related Learning*				
Term 1:	Term 2:	Term 3:	Term 4:	Term 5:
<ul style="list-style-type: none"> Foundations of Physics Materials Charge and current Energy, power and resistance 	<ul style="list-style-type: none"> Motion Electrical Circuits 	<ul style="list-style-type: none"> Forces in action Electrical Circuits (continued) Waves 	<ul style="list-style-type: none"> Work, energy and power Newton's Laws of Motion Waves (continued) Quantum Physics 	<ul style="list-style-type: none"> Quantum Physics (continued) Research Report Preparation for end of year assessment
<p>Links: Prior learning KS4 - Students have previously learnt 'Working Scientifically' content, Hooke's Law, elasticity and electrical circuits and circuit rules.</p> <p>Curriculum Intent: Students deepen their ability to design, carry out, analyse and evaluate practical work. Students can apply knowledge of materials to real world problems. Students develop their understanding of how and why useful circuits work.</p>	<p>Links: Prior learning KS4 - Students have previously studied forces and motion (including gravity, stopping distance and motion equations/graphs) and electrical circuits and rules</p> <p>Curriculum Intent: Students develop their understanding of motion to situations of constant acceleration, analysing motion vertically and horizontally to predict outcomes. Students gain understanding of 'ideal' meters, 'real world' power sources and the impact this has on circuit design.</p>	<p>Links: Prior learning KS4 - Students have previously studied forces on falling objects (terminal velocity, drag forces), moments and pressure. Also, wave properties, wave behaviour, the EM spectrum</p> <p>Curriculum Intent: Students analyse free body diagrams, motion in more than one dimension and motion with non-uniform acceleration. Students design & test a sensing circuit, and develop their vocabulary to describe and measure wave motion. Reflection, refraction, diffraction and polarisation of EM waves are explored.</p>	<p>Links: Prior learning KS4 - Students have previously studied electron energy levels in atoms, Newton's Laws of Motion and momentum</p> <p>Curriculum Intent: The relationship between work, energy and power for a moving object is explored; Newton's Laws, momentum and collisions in one and two dimensions are studied. The emergence of a new branch of Science, Quantum Physics, due to new experimental data is explored. Students are introduced to the wave-particle duality of light.</p>	<p>Links: Prior learning KS4 - The research report allows students to draw on all aspects of prior learning.</p> <p>Curriculum Intent: The wave-particle duality model is extended to matter, specifically electrons, and experimental evidence for this is provided. Students select an area of Physics of interest to them which is outside the Physics specification and undertake research which is presented in a 2000 word report. Students are introduced to the importance of cross checking their sources of information and how to footnote and structure a report.</p>

Equipment needed for sessions:	What can you do to support your child?
<ul style="list-style-type: none"> Physics folder A level Physics textbook. Relevant student guides – practical and knowledge Calculator, protractor, ruler and pencil 	<ul style="list-style-type: none"> Encourage your child to regularly read their A level Physics textbook. Encourage your child to complete the homework tasks they are set by their Physics teachers to a high standard, asking them to show you their finished work. Encourage your child to use the OCR website to access additional material, past papers and candidate exemplars.
How will learning be assessed and progress measured?	Extension and enrichment activities:
<ul style="list-style-type: none"> Trial examinations carried out at selected points during the year. End of topic summative assessments. Marking of homework/written assessments is carried out on a regular basis in line with the College marking policy. Regular peer and self-marking. 	<ul style="list-style-type: none"> A Level Physics Live event. Science peer mentoring.