

Switching to OCR from Pearson (Edexcel)

The content within the [OCR Physics A specification](#) covers the 'Big Ideas' of physics and will be very familiar. We've laid it out in a logical progression to support co-teaching the AS level and teaching the A level in a linear way.

| OCR Physics A | Pearson (Edexcel) Physics |
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| <p>Module 1: Practical skills</p> <p>Planning, implementing, analysis and evaluation</p> <p>Plus all the skills to be covered in the Practical Endorsement</p> | <p>The same practical skills, as mandated by the DfE, are listed in appendix 5a and 5b of the Pearson Edexcel specification</p> |
| <p>Module 2: Foundations of physics</p> <ul style="list-style-type: none"> Physical quantities S.I. units Measurements and uncertainties Scalars and vectors | <p>Topic 1: Working as a physicist</p> <ul style="list-style-type: none"> Base and derived quantities Practical skills Physical measurements Communicating scientific ideas Applications of Science Science in society |
| <p>Module 3: Forces and motion</p> <ul style="list-style-type: none"> Kinematics and dynamics Linear motion Projectile motion Motion with non-uniform acceleration Equilibrium Density [and pressure] Work, energy and power Springs Mechanical properties of materials Newton's laws of motion Momentum | <p>Topic 2: Mechanics</p> <ul style="list-style-type: none"> Moments Motion along a straight line Projectile motion Newton's laws of motion Momentum Work, energy and power Conservation of energy Vectors <p>Topic 4: Materials</p> <ul style="list-style-type: none"> Stoke's law Density Mechanical properties of materials |



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| | <ul style="list-style-type: none"> • Springs |
| <p>Module 4: Electrons, waves and photons</p> <ul style="list-style-type: none"> • Charge and current • E.m.f. and p.d. • Resistivity and resistance • Power • Series and parallel circuits • Internal resistance • Potential dividers • Wave motion • Electromagnetic waves • Superposition • Stationary waves • Quantum physics • Photons • The photoelectric effect • Wave particle duality | <p>Topic 3 Electric circuits</p> <ul style="list-style-type: none"> • Charge and current • Current voltage characteristics • Resistivity • Circuits • Potential dividers • E.m.f. and internal resistance • Drift velocity • Electrical power • Modelling conduction electrons <p>Topic 5: Wave and particle nature of light</p> <ul style="list-style-type: none"> • Progressive waves • Longitudinal and transverse waves • Superposition and stationary waves • Refraction, diffraction and interference • Lense equations • Photoelectric effect |
| <p>Module 5: Newtonian world and astrophysics</p> <ul style="list-style-type: none"> • Temperature • Solid, liquid and gas • Thermal properties of materials • Ideal gases • Circular motion • Centripetal force • Simple harmonic oscillations • Energy of a simple harmonic oscillator • Damping • Point and spherical masses • Newton's law of gravitation • Planetary motion • Gravitational potential and energy • Stars | <p>Topic 6 : Further mechanics</p> <ul style="list-style-type: none"> • Impulse • Circular motion • Collisions <p>Topic 13 : Oscillations</p> <ul style="list-style-type: none"> • Simple harmonic motion • Forced vibrations and resonance • Damping <p>Topic 9 : Thermodynamics</p> <ul style="list-style-type: none"> • Thermal energy transfer • Ideal gases • Molecular kinetic theory model • Stefan-Boltzmann law • Wein's law <p>Topic 10 : Space</p> <ul style="list-style-type: none"> • Luminosity |



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| <ul style="list-style-type: none"> • Electromagnetic radiation from stars • Cosmology | <ul style="list-style-type: none"> • Standard candles/stars • Cosmology <p>Topic 12 : Gravitational fields</p> <ul style="list-style-type: none"> • Gravitational fields • Gravitational field strength and potential • Orbits of planets and satellites |
| <p>Module 6: Particles and medical physics</p> <ul style="list-style-type: none"> • Capacitors • Energy stored by a capacitor • Charging and discharging capacitors • Point and spherical charges • Coulomb's law • Uniform electric field • Electric potential energy • Magnetic fields • Motion of charged particles • Electromagnetism • The nuclear atom • Fundamental particles • Radioactivity • Nuclear fission and fusion • Using X rays • Diagnostic methods in medicine • Using ultrasound | <p>Topic 7 : Electric and magnetic fields</p> <ul style="list-style-type: none"> • Coulomb's law • Electric field strength • Electric potential • Capacitance • Energy stored by a capacitor • Capacitor discharge • Motion of charged particles in a magnetic field • Magnetic flux density • Magnetic flux linkage • Electromagnetic induction • Alternating current rms voltages and currents <p>Topic 8 : Nuclear and particle physics</p> <ul style="list-style-type: none"> • Particle tracks • Particle interactions • Mass-energy equivalence <p>Topic 11: Nuclear radiation</p> <ul style="list-style-type: none"> • The nuclear atom • Binding energy • Radioactivity • Fission/fusion |



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| Appendix 5f: Mathematical requirements <ul style="list-style-type: none">• Arithmetic and numerical computation• Handling data• Algebra• Graphs• Geometry and trigonometry | Appendix 6: Mathematical skills and exemplifications <ul style="list-style-type: none">• Arithmetic and numerical computation• Handling data• Algebra• Graphs• Geometry and trigonometry |



Assessment

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| <p>AS Paper 1: Breadth in Physics, Modules 1-4 50% of AS</p> <p>Written paper 1hr 30 minutes</p> <p>70 marks</p> <p>Section A multiple choice questions, 20 marks. Section B short structured questions, covering problem solving, calculations, practical and theory, 50 marks.</p> | <p>AS Paper 1: Core Physics 1</p> <p>50% of AS</p> <p>Written paper 1hr 30 minutes</p> <p>80 marks</p> <p>Section A Topics 1-3 56–60 marks</p> <p>Section B Synoptic 20–24 marks.</p> <p>The paper may include multiple-choice, short open, open-response, calculation and extended writing questions.</p> |
| <p>AS Paper 2: Depth in Physics, Modules 1-4 50% of AS</p> <p>Written paper 1hr 30 minutes</p> <p>70 marks</p> <p>Short structured questions and extended response questions, problem solving, calculations, practical and theory.</p> | <p>AS Paper 2: Core Physics II</p> <p>50% of AS</p> <p>Written paper 1 hr 30 minutes</p> <p>80 marks</p> <p>Section A Topics 1,4,5 56-60 marks</p> <p>Section B Synoptic and will include a short article</p> <p>The paper may include multiple-choice, short open, open-response, calculations and extended writing questions.</p> |
| <p>A Level Paper 1: Modelling Physics, Modules 1, 2, 3 & 5</p> <p>37% of A level</p> <p>Written paper 2 hours 15 minutes</p> <p>100 marks</p> <p>Section A multiple choice questions, 15 marks. Section B short structured questions, and extended response questions, problem solving, calculations, practical and theory 85 marks.</p> | <p>A Level Paper 1: Advanced Physics I</p> <p>30% of A level</p> <p>Written paper 1hour 45 minutes</p> <p>90 marks</p> <p>Topics 6-8 plus some from AS1-3</p> <p>The paper may include multiple-choice, short open, open-response, calculations and extended writing questions.</p> |



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| <p>A Level Paper 2: Exploring Physics, Modules 1, 2, 4 & 6 37% of A level Written paper 2 hours 15 minutes 100 marks</p> <p>Section A multiple choice questions, 15 marks. Section B short structured questions and extended response questions, problem solving, calculations, practical and theory 85 marks.</p> | <p>A Level Paper 2: Advanced physics II 30% of A level Written paper 1 hour 45 minutes 90 marks Topics 9-13 plus some from AS 1,5,6 The paper may include multiple-choice, short open, open-response, calculations and extended writing questions.</p> |
| <p>A Level Paper 3: Unified Physics, Modules 1-6 26% of A level Written paper 1 hour 30 minutes 70 marks</p> <p>Short structured questions and extended response questions, problem solving, calculations, practical and theory.</p> | <p>A Level Paper 3: General and practical principles in Physics 40% of A level Written paper 2 hours 30 minutes 120 marks</p> <p>Questions in this paper may draw on any of the topics in this specification. The paper will include synoptic questions that may draw on two or more different topics. The paper will include questions that assess conceptual and theoretical understanding of experimental methods (indirect practical skills) that will draw on students' experiences of the core practicals.</p> |

