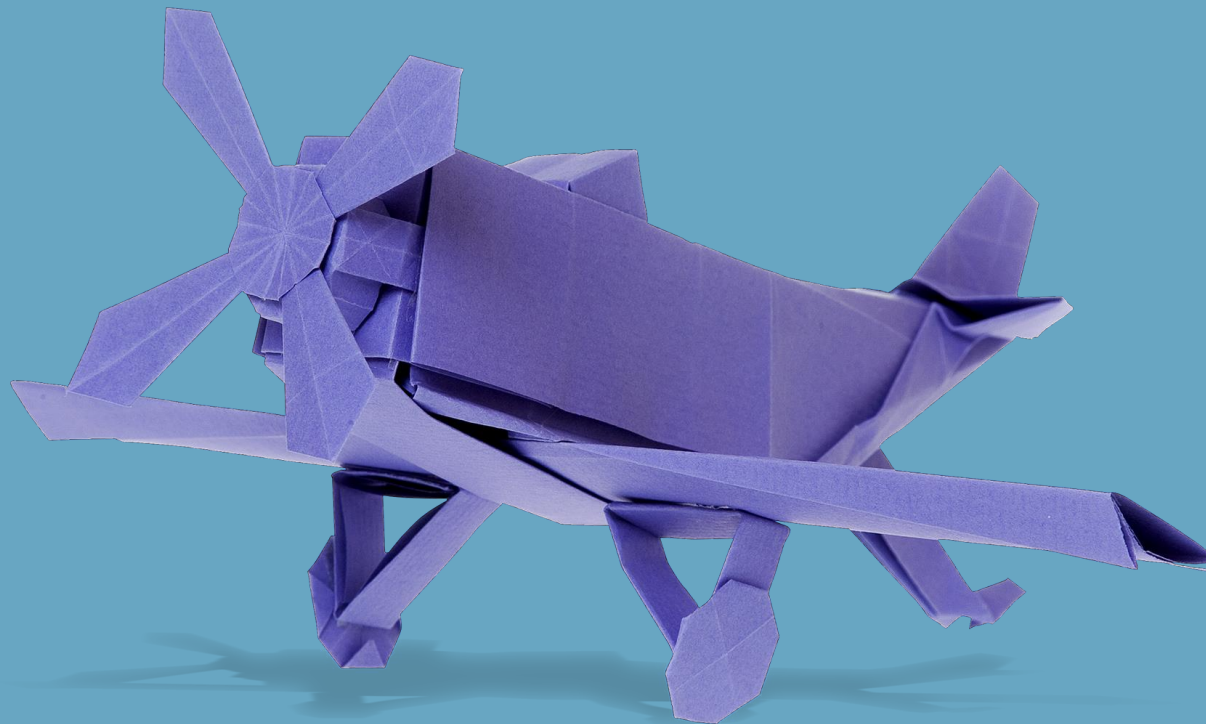




Pearson  
Edexcel

# A level Physics

Switching from OCR 'A' Physics  
to Edexcel Physics



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# AS AND A LEVEL PHYSICS

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## Switching from OCR 'A' to Edexcel

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This document is designed to help you compare the 2015 OCR Physics 'A' specification with the 2015 Edexcel Physics specification.

The document gives an overview, at the topic level, of where the material covered in the new OCR Physics 'A' specification can be found in the Edexcel Physics specification. The following tables then give a more detailed breakdown of the OCR 'A' and Edexcel specifications, and highlight areas of difference. This will help you see where material that you currently teach in the OCR specification is not present in the Edexcel specification; or where the Edexcel specification incorporates material that is new to you.

As a general overview, the 2015 Edexcel Physics specification is split into a number of topics. At AS, these topics are: Working as a Physicist; Mechanics; Electric Circuits; Materials; and Waves and the Particle Nature of Light. In the second year of the A level, the topics are: Further Mechanics; Electric and Magnetic Fields; Nuclear and Particle Physics; Thermodynamics; Space; Nuclear Radiation; Gravitational Fields; and Oscillations.

The course can also be taught using a context-led form approach, as exemplified by the Salters Horners (SHAP) approach. This approach considers applications that draw on areas of physics, and moves on to the underlying laws, theories and models of physics. Both the SHAP approach and the concept approach to the specification involve the same specification statements at AS and A level, but the SHAP approach groups these statements into topics in a different way.

As well as great physics within the specification, there are other ways in which we can help support your teaching of our new A level Physics specification. Our free support includes:

- additional sets of question papers
- Results Plus, now with Mock Analysis service
- Exam Wizard, our online bank of past paper questions
- documents to help deliver the mathematics and practical aspects of the specification
- worksheets for each Core Practical in the specification.

## Overview of content

OCR Physics A	Edexcel Physics
<b>Module 1: Development of practical skills in physics</b>	Identical requirements with the skills acquired by carrying out the core practicals and other experiments
<b>Module 2: Foundations of physics</b>	Core practicals for all Topics Topic 1: Working as a Physicist Topic 2: Mechanics 12, 13, 14
<b>Module 3: Forces and motion</b>	
3.1 Motion	Topic 2: Mechanics 9, 10, 11, 15, 19
3.2 Forces	Topic 2: Mechanics 16–18, 23–24 Topic 4: Materials 49, 50, 52
3.3 Work, energy and power	Topic 2: Mechanics 25–30
3.4 Material	Topic 4: Materials 53–58
3.5 Newton's laws of motion and momentum	Topic 2: Mechanics 20–22 Topic 6: Further Mechanics 97–101
<b>Module 4: Electrons, waves and photons</b>	
4.1 Charge and current	Topic 3: Electric Circuits 31, 34, 41
4.2 Energy, power and resistance	Topic 3: Electric Circuits 32, 33, 35, 37–39, 47–48
4.3 Electrical circuits	Topic 3: Electric Circuits 36, 42–45
4.4 Waves	Topic 5: Waves and Particle Nature of Light 59–74, 82–85
4.5 Quantum physics	Topic 5: Waves and Particle Nature of Light 86–95

OCR Physics A	Edexcel Physics
<b>Module 5: Newtonian world and astrophysics</b>	
5.1 Thermal physics	Topic 9: Thermodynamics 144–152
5.2 Circular motion	Topic 6: Further Mechanics 103–107
5.3 Oscillations	Topic 13: Oscillations 181–191
5.4 Gravitational fields	Topic 12: Gravitational Fields 174–180
5.5 Astrophysics and cosmology	Topic 9: Thermodynamics 153–155 Topic 5: Waves and particle nature of light 96 Topic 10: Space 156–163
<b>Module 6: Particles and medical physics</b>	
6.1 Capacitors	Topic 7: Electric and Magnetic Fields 116–120
6.2 Electric fields	Topic 7: Electric and Magnetic Fields 108–115
6.3 Electromagnetism	Topic 7: Electric and Magnetic Fields 120–127
6.4 Nuclear and particle physics	Topic 8: Nuclear and Particle Physics 130, 131, 141–143 Topic 11: Nuclear Radiation 164–173
6.5 Medical imaging	Not covered in the Edexcel specification

## In-depth comparison

OCR Physics A	Edexcel Physics	What's new for you	What do you no longer teach
<b>Modules 1: Development of practical skills in physics</b> <b>Module 2: Foundations of physics</b>	Topic 1: Working as a Physicist Topic 2: Mechanics 12–14 Carrying out the Core practicals for all Topics	These topics are not intended to be taught as a discrete topic. The knowledge and skills specified here should pervade the entire course and apply equally to both specifications.	
<b>Module 3: Forces and motion</b>	Topic 2: Mechanics 9–11, 15–30 Topic 4: Materials 49–58  Topic 6: Further Mechanics 97–101	✓ 51 – Stoke's law and its application	✓ Couple, torque of a couple ✓ $P=hpg$
<b>Module 4: Electrons, waves and photons</b>	Topic 3: Electric Circuits 31–48  Topic 5: Waves and Particle Nature of Light 59–95	✓ 36 – derivation of the equations for combining resistors in series and parallel  ✓ 68 – be able to use the equation for the speed of a transverse wave on a string ✓ 71–81 geometric optics, lenses ✓ 84 – use of $n\lambda = d\sin\theta$	✓ The principle of Kirchoff's laws is in the Edexcel spec but not the name Kirchoff  ✓ Intensity of a wave $\propto$ amplitude <sup>2</sup> ✓ properties of EM waves ✓ orders of magnitude of wavelengths in EM spectrum ✓ Young's double slit experiment and formula
<b>Module 5: Newtonian world and astrophysics</b>	Topic 9: Thermodynamics 144–155  Topic 6: Further Mechanics 103–107	✓ 149 – be able to derive and use the equation $pV = \frac{1}{3} Nm\langle c^2 \rangle$ ✓ 152 – be able to derive and use the equation $\frac{1}{2} m\langle c^2 \rangle = \frac{2}{3} kT$	✓ Simple kinetic theory for solids, liquids and gases ✓ Brownian motion ✓ Amount of substance in moles, Avogadro's number ✓ Boltzmann constant as $R/N_a$

OCR Physics A	Edexcel Physics	What's new for you	What do you no longer teach
	<p>Topic 13: Oscillations 181–191</p> <p>Topic 12: Gravitational Fields 174–180</p> <p>Topic 5: Waves and Particle Nature of Light 96</p> <p>Topic 10: Space 156–163</p>	<p>✓ 183 – be able to use the equations for a simple pendulum and a mass oscillating on a spring</p> <p>✓ 156 – use of the equation linking intensity, luminosity and distance</p> <p>✓ 157 – using trigonometric parallax</p> <p>✓ 158 – determining astronomical distances using intensity measurements received from standard candles</p>	<p>✓ Kepler's laws of planetary motion</p> <p>✓ Gravitational PE in terms of <math>G</math></p> <p>✓ Escape velocity</p> <p>✓ The parsec unit</p> <p>✓ Equation <math>p = 1/d</math></p> <p>✓ The Cosmological principle</p>
<b>Module 6: Particles and medical physics</b>	Topic 7: Electric and Magnetic Fields 108–127	<p>✓ 113 – electric field between parallel plates</p> <p>✓ 128 – frequency, period, peak value and root mean square applied to alternating currents and potential differences</p> <p>✓ 129 – use of equations relating rms and peak values</p>	<p>✓ Combining capacitors in parallel and series</p> <p>✓ Equation <math>C = \epsilon_0 A/d</math></p> <p>✓ Capacitance of an isolated sphere</p> <p>✓ Magnetic field lines for a long conductor, solenoid or flat coil</p> <p>✓ Transformers</p>

OCR Physics A	Edexcel Physics	What's new for you	What do you no longer teach
	Topic 8: Nuclear and Particle Physics 130–143	<ul style="list-style-type: none"> <li>✓ 132 – thermionic emission</li> <li>✓ 133 – role of electric and magnetic fields in particle accelerators</li> <li>✓ 134 – derive and use equation <math>r = p/BQ</math></li> <li>✓ 135 – apply conservation laws to interpret particle tracks</li> <li>✓ 137 – use of mass/ energy equation in the creation and annihilation of matter and antimatter</li> </ul>	<ul style="list-style-type: none"> <li>✓ Strong nuclear force and the weak force, formula for radius of nucleus and nuclear and atomic densities</li> </ul>
	Topic 11: Nuclear Radiation 164–173	<ul style="list-style-type: none"> <li>✓ 166 – understand the processes of fission and fusion with reference to the binding energy per nucleon graph</li> </ul>	<ul style="list-style-type: none"> <li>✓ Basic structure of a fission reactor</li> <li>✓ All of the work on medical imaging</li> </ul>