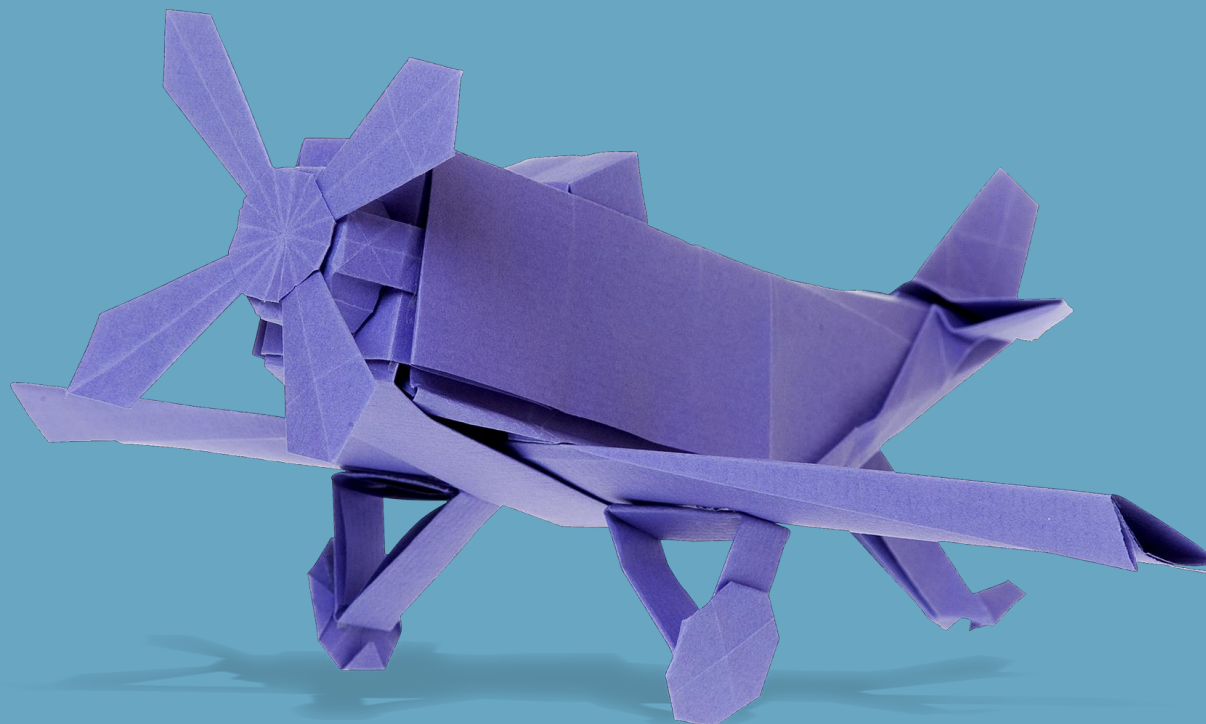




Pearson  
Edexcel

# A level Physics

Switching from OCR 'B' Physics  
to Edexcel Physics



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# AS AND A LEVEL PHYSICS

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## Switching from OCR 'B' to Edexcel

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This document is designed to help you compare the 2015 OCR Physics 'B' (Advancing Physics) 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 'B' specification can be found in the new Edexcel Physics specification. The following tables then give a more detailed breakdown of the OCR 'A' and Edexcel specifications, and highlight areas of difference. These 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 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 'B' (Advancing Physics)  | Edexcel Physics   |
|--|---|
| <b>Module 1: Development of practical skills in physics</b><br><b>Module 2: Foundations of physics</b> | Identical requirements for the skills acquired by carrying out the core practicals and other experiments  |
| <b>Module 3: Physics in action</b>   |   |
| 3.1.1 Communication, imaging and signalling  | Topic 5: Waves and Particle Nature of Light 60, 71, 75, 76, 77, 79, 80, 81, 82  |
| 3.1.2 Communication, sensing   | Topic 3: Electric Circuits 31–48  |
| 3.2 Mechanical properties of material  | Topic 4: Materials 53–58  |
| <b>Module 4: Understanding processes</b>   |   |
| 4.1 Waves and quantum behaviour  | Topic 5: Waves and Particle Nature of Light 65–67, 71–74, 83, 84, 86, 87, 90–94   |
| 4.2 Space, time and motion   | Topic 2: Mechanics 9–22, 25–30  |
| <b>Module 5: Rise and fall of the clockwork universe</b>   |   |
| 5.1.1 Models and rules   | Topic 7: Electric and Magnetic Fields 116–120<br>Topic 11: Nuclear Radiation 168, 172, 173<br>Topic 13: Oscillations 181–186, 188–190   |
| 5.1.2 Out into space   | Topic 6: Further Mechanics 103–107<br>Topic 12: Gravitational fields 175, 176, 177, 178   |
| 5.1.3 Our place in the universe  | Topic 10: Space 157, 162  |
| 5.2.1 Matter   | Topic 9: Thermodynamics 144–152   |
| 5.2.2 Hot or cold  | N/A   |
| <b>Module 6: Field and particle physics</b>  |   |
| 6.1 Fields   | Topic 7: Electric and Magnetic Fields 108–115, 121–127<br>Topic 12: Gravitational Fields 179  |
| 6.2 fundamental particles  | Topic 8: Nuclear and Particle Physics 130, 131, 133, 135, 137, 139, 140<br>Topic 5: Waves and Particle Nature of Light 96<br>Topic 11: Nuclear Radiation 164–168, 170, 172, 173 |

## In-depth comparison

| OCR 'B' Advancing Physics  | Edexcel Physics   | What's new for you   | What do you no longer teach  |
|--|---|--|--|
| <b>Module 1: Development of practical skills in physics</b><br><b>Module 2: Foundations of physics</b> | Core Practicals 1–16 imbedded into the specification  | Identical requirements with the skills acquired by carrying out the core practicals and other experiments  |  |
| <b>Module 3: Physics in action</b>   | <p>Topic 5: Waves and Particle Nature of Light 59, 60, 71, 75, 76, 77, 79, 80, 81, 82</p> <p>Topic 3: Electric Circuits 31–48</p> <p>Topic 4: Materials 53–58</p> | <ul style="list-style-type: none"> <li>✓ 78 – power of lens combinations</li> <li>✓ 36 – be able to derive and use the equations for resistors in series and parallel</li> <li>✓ 42 – how potential along a uniform current-carrying wire varies with distance along it</li> <li>✓ 47 – thermistors</li> <li>✓ 48 – light dependent resistors</li> <li>✓ 50 – upthrust is weight of fluid displaced</li> <li>✓ 51 – use of Stoke's law conditions when it applies</li> </ul> | <ul style="list-style-type: none"> <li>✓ All work related to storage of images, digitising a signal, pixel, bit, bite, sampling rate, rate of transmission</li> <li>✓ All work relating to conductance and conductivity</li> <li>✓ Size of particles and their spacing, dislocations and chain entanglement</li> </ul> |
| <b>Module 4: Understanding processes</b>   | Topic 5: Waves and Particle Nature of Light 65–67, 71–74, 83, 84, 86, 87, 90–94   | <ul style="list-style-type: none"> <li>✓ 59–63 – transverse and longitudinal waves</li> <li>✓ 68 – speed of transverse waves on a string <math>v = \sqrt{T/u}</math></li> <li>✓ 70 – use of equation <math>I = P/A</math></li> </ul>   |  |

| OCR 'B' Advancing Physics                                | Edexcel Physics   | What's new for you   | What do you no longer teach   |
|--|---|--|---|
|  | <p>Topic 2: Mechanics 9–22, 25–30</p> <p>Topic 6: Further Mechanics 97, 99</p>  | <ul style="list-style-type: none"> <li>✓ 72 – critical angle <math>\sin C = 1/n</math></li> <li>✓ 73 – total internal reflection</li> <li>✓ 74 – refractive index</li> <li>✓ 89 – pulse echo technique</li> <li>✓ 23 – moment of a force</li> <li>✓ 24 – centre of gravity</li> <li>✓ 30 – energy efficiency</li> <li>✓ 99 – conservation of momentum to problems in two dimensions</li> </ul> |   |
| <b>Module 5: Rise and fall of the clockwork universe</b> | <p>Topic 7: Electric and Magnetic Fields 116–120</p> <p>Topic 11: Nuclear Radiation 168, 172, 173</p> <p>Topic 13: Oscillations 181–186, 188–190</p> <p>Topic 6: Further Mechanics 103–107</p> <p>Topic 12: Gravitational Fields 175, 176, 177, 178</p> <p>Topic 10: Space 157, 162</p> | <ul style="list-style-type: none"> <li>✓ 158 – use of standard candle</li> <li>✓ 159 – interpreting Hertzsprung-Russell Diagrams</li> <li>✓ 160 – relating Hertzsprung-Russell diagrams to life cycle of stars</li> </ul>  | <ul style="list-style-type: none"> <li>✓ Use of radar-type measurements to determine distances with solar system</li> <li>✓ Use of relativistic factor <math>\gamma</math></li> </ul> |

| OCR 'B' Advancing Physics             | Edexcel Physics  | What's new for you  | What do you no longer teach  |
|---------------------------------------|--|---|--|
|                                       | Topic 9: Thermodynamics 144–155  | <ul style="list-style-type: none"> <li>✓ 149 – be able to derive and use the equation <math>pV = \frac{1}{3} Nm\langle c^2 \rangle</math></li> <li>✓ 152 – be able to derive and use the equation <math>\frac{1}{2} m\langle c^2 \rangle = \frac{2}{3} kT</math></li> <li>✓ 153 – black bodies</li> <li>✓ 154 – Stefan-Boltzmann law</li> <li>✓ 155 – Wien's law</li> </ul>   | <ul style="list-style-type: none"> <li>✓ Avogadro's constant and the mole</li> <li>✓ All of the material in 5.2.2 Matter: hot or cold</li> </ul> |
| <b>Module 6: Fields and particles</b> | <p>Topic 7: Electric and Magnetic Fields 108–115, 121–127</p> <p>Topic 12: Gravitational Fields 179</p> <p>Topic 8: Nuclear and Particle Physics 130, 131, 133, 135, 137, 139, 140</p> <p>Topic 5: Waves and Particle Nature</p> | <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 equation <math>r = \frac{p}{BQ}</math></li> <li>✓ 135 – interpretation of particle tracks</li> <li>✓ 138 – use of MeV, GeV, MeV/c<sup>2</sup> and GeV/c<sup>2</sup></li> <li>✓ 140 – standard model</li> <li>✓ 141 – antimatter</li> <li>✓ 142 – application of conservation laws to particle interactions</li> </ul> | <ul style="list-style-type: none"> <li>✓ Transformer and dynamo, conductance and permeance</li> </ul>  |

| OCR 'B' Advancing Physics | Edexcel Physics   | What's new for you | What do you no longer teach   |
|---------------------------|---|--------------------|---|
|                           | of Light 96<br>Topic 11: Nuclear Radiation 164–168, 170, 172, 173 |                    | <ul style="list-style-type: none"> <li>✓ Chain reaction in nuclear reactors</li> <li>✓ Absorbed and effective dose</li> </ul> |