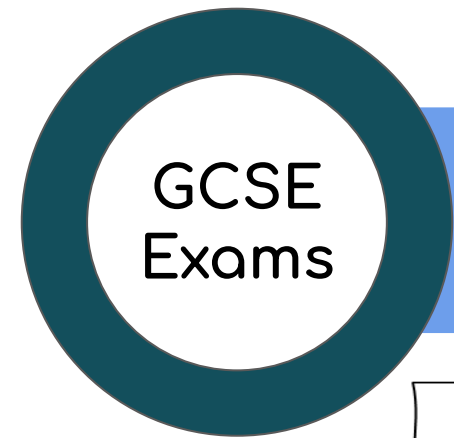


# Trilogy Physics KS4 overview

What is my learning  
journey for Combined  
Physics?



**Applications**  
Appreciate how scientific understanding can lead to the development of cures and treatments for diseases to save lives  
Understand how to minimise our impact on the organisms in the world around us  
Consider whether just because science allows us to manipulate organisms, should we be allowed to?  
Understand the importance of science to a wide variety of careers

**Revision tasks may include (but is not limited to):**  
★ Past paper practice  
★ Exam question analysis  
★ Knowledge organisers & knowledge retrievers  
★ Mock papers

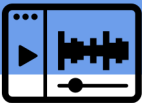
**Content** – Permanent and induced magnets, magnetic field, electromagnets.  
**Bigger Picture Focus** – . Engineers make use of the fact that a magnet moving in a coil can produce electric current and also that when current flows around a magnet it can produce movement. It means that systems that involve control or communications can take full advantage of this.

P7  
Electromagnetism



**Assessment & exams**  
→ End of unit tests  
→ Exam practice for each unit  
→ Required practical activities in lesson  
→ 2 x 1hr 45 min exams  
*Note: there is no coursework element*

P6 Waves



**Content** – Speed, acceleration, distance-time graphs, velocity-time graphs, contact and non-contact forces, gravity, Hooke's Law, Newton's laws, scalar and vector  
**Bigger Picture Focus** – Engineers analyse forces when designing a great variety of machines and instruments, from road bridges and fairground rides to atomic force microscopes. Anything mechanical can be analysed in this way. Recent developments in artificial limbs use the analysis of forces to make movement possible.

P5 Forces



**Content** – Labeling a wave, calculating wave speed, refraction, electromagnetic waves uses and dangers, lenses & visible light  
**Bigger Picture Focus** – . Designing comfortable and safe structures such as bridges, houses and music performance halls requires an understanding of mechanical waves. Modern technologies such as imaging and communication systems show how we can make the most of electromagnetic waves.

P4 Atomic structure



**Independent learning**  
Tasks may include:  
→ Consolidation work  
→ Educake quizzes  
→ 6 mark exam questions  
→ Past paper practice  
→ Interleaved tasks

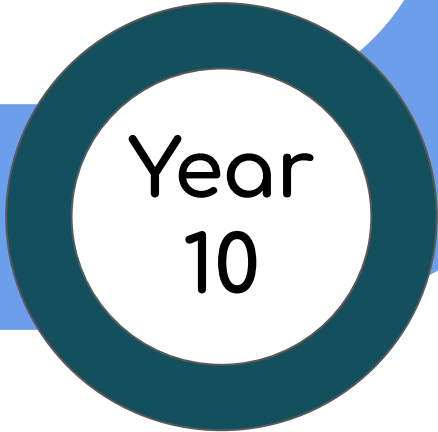
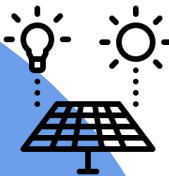


**Useful websites**  
→ BBC Bitesize  
→ mrrscience.com  
→ GCSEPod  
→ Oak Academy  
→ Educake

**Content** – Atomic model, discovery of the atomic model, isotopes, ions, radioactive decay.  
**Bigger Picture Focus** – Although radioactivity was discovered over a century ago, it took many nuclear physicists several decades to understand the structure of atoms, nuclear forces and stability. Early researchers suffered from their exposure to ionising radiation. Today radioactive materials are widely used in medicine, industry, agriculture and electrical power generation.

**Content** – Energy stores, energy calculations, work, power, renewable and non-renewable energy sources.  
**Bigger Picture Focus** – Limits to the use of fossil fuels and global warming are critical problems for this century. Physicists and engineers are working hard to identify ways to reduce our energy usage.

P1 Energy



P3 Particle model

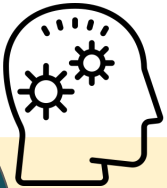


P2 Electricity



**Content** – Electrical charges & fields, current, voltage, resistance, power, circuits, National grid.  
**Bigger Picture Focus** – To understand how demands on electricity production are increasing and leading to the need to build more power stations - is there a sustainable answer?

Enquiry skills



This unit covers some of the key skills that you will use in Science:

- The maths skills that are used in science
- How to draw and analyse graphs
- Identifying variables
- How to carry out an investigation
- How to evaluate your work

**Content** – States of matter, changes of state, gas particles, temperature changes & specific heat capacity, density, gas pressure  
**Bigger Picture Focus** – To explain a wide range of observations the principles used when designing vessels to withstand high pressures and temperatures, such as submarines and spacecraft.

