Triple Physics KS4 overview

What is my learning journey for GCSE Physics?

Content - Permanent and induced magnets, magnetic field, electromagnets, motor effect, generator effect, speakers, transformers 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.

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

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

GCSE Exams



Content - Big bang theory, red shift, life cycle of a

Bigger Picture Focus – In the past century, there has been remarkable progress in understanding the scale & structure of the universe & its evolution. New questions have emerged recently. 'Dark matter', which bends light and holds galaxies together but does not emit electromagnetic radiation - what is it? And what is causing the universe to expand ever faster?

P8 Space



P⁷ Electromagnetism





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.

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.



Independent learning

Tasks may include:

- Consolidation work
- Educake guizzes 6 mark exam
- questions
 - Past paper practice Interleaved tasks

Home Learning

Year



P5 Forces

Assessment & exams

2 x 1hr 45 min exams

Exam practice for each unit

Required practical activities in

Note: there is no coursework

P6 Waves

End of unit tests

lesson

element



P4 Atomic structure

Content - Energy stores, energy calculations, work,

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.

power, renewable and non-renewable energy

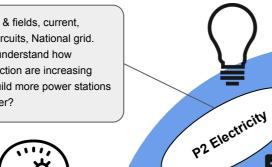




Useful websites

- \rightarrow **BBC** Bitesize
- mrrscience.com
- \rightarrow **GCSEPod**
- \rightarrow Oak Academy
- Educake

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?





Content – Atomic model, discovery of the atomic

model, isotopes, ions, radioactive decay, nuclear

fission & fusion, uses and dangers of radiation.

materials are widely used in medicine, industry,

agriculture and electrical power generation. Is this

Bigger Picture Focus - Today radioactive

the answer to increasing energy demands?

P3 Particle model

Year



Energy

Enquiry skills

This unit covers some of the key skills that you will

- The maths skills that are used in science
- How to draw and analyse graphs
- How to carry out an investigation

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.





use in Science:

- Identifying variables
- How to evaluate your work