Shrewsbury Academy

Marches Academy Trust

Triple Physics KS4 overview

What is my learning journey for GCSE 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

GCSE Exams

PHYSICS REVISION

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.

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

Content – Big bang theory, red shift, life cycle of a star
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?

P7 Electromagnetism

P6 Waves

P8 Space

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 quizzes
- ➔ 6 mark exam questions
- ➔ Past paper practice
- ➔ Interleaved tasks

Home Learning

Year 11

P5 Forces

P4 Atomic structure

Useful websites

- ➔ BBC Bitesize
- ➔ mrrscience.com
- ➔ GCSEPod
- ➔ Oak Academy
- ➔ Educake

Content – – Atomic model, discovery of the atomic model, isotopes, ions, radioactive decay, nuclear fission & fusion, uses and dangers of radiation.
Bigger Picture Focus – Today radioactive materials are widely used in medicine, industry, agriculture and electrical power generation. Is this the answer to increasing energy demands?

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

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?

P2 Electricity

P3 Particle model

Year 10

Year 9

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.