

Physics

This study enables students to

- develop their understanding of the role of careful and systematic experimentation, and modelling, in the development of theories and laws.
- undertake practical activities and apply physics principles to explain and quantify both natural and constructed phenomena.
- find quantitative explanations for phenomena occurring from the subatomic scale through to the planets, solar systems and galaxies in the Universe.

Unit 3: How do fields explain motion and electricity?

Students examine the production of electricity and its delivery to homes. Students consider the field model as a construct that has enabled an understanding of why objects move when they are not apparently in contact with other objects. They explore the interactions, effects and applications of gravitational, electric and magnetic fields including the design and operation of particle accelerators. Students use Newton's laws and Einstein's theories to investigate and describe motion.

KEY SKILLS REQUIRED

Question and predict; plan and conduct experiments; record and process data; analyze and evaluate relationships in data; use critical & creative thinking; write a scientific report; and good mathematical skills

Assessed Tasks

Practical Work portfolio, Topic Questions, Topic Tests, End of Unit Examination

Unit 4: How can two contradictory models explain both light and matter?

Light and matter - which initially seem to be quite different - have been observed as having similar properties. In this unit, students explore the use of wave and particle theories to model the properties of light and matter. They examine how the concept of the wave is used to explain the nature of light and analyse its limitations in describing light behaviour. Students further investigate light by using a particle model to explain its behaviour. A wave model is also used to explain the behaviour of matter which enables students to consider the relationship between light and matter. Students are challenged to think beyond the concepts experienced in everyday life to study the physical world from a new perspective.

KEY SKILLS REQUIRED

As for Unit 3 above

Assessed Tasks

Practical work, Topic questions & tests, End of Unit examination

Student Designed Practical Investigation