

PHYSICS

Unit 3

How Do Fields Explain Motion & Electricity?

AREAS OF STUDY:

- How do Physicists explain motion in two dimensions?
- How do things move without contact?
- How are fields used in electrical generation?

OUTCOMES:

On completion of this unit, students should be able to:

1. Investigate motion and related energy transformations experimentally, and analyse motion using Newton's laws of motion in one and two dimensions.
2. Analyse gravitational, electric and magnetic fields, and apply these to explain the operation of motors and particle accelerators, and the orbits of satellites.
3. Analyse and evaluate an electricity generation and distribution system.

ASSESSMENT:

Assessment Tasks:

- Analysis and evaluation of primary and/or secondary data, including data plotting, identified assumptions or data limitations, and conclusions.
- Application of physics concepts to explain a model theory, device, design or innovation.
- Problem-solving, applying physics concepts and skills to real-world contexts.

Unit 4

How Have Creative Ideas and Investigation Revolutionised Thinking in Physics?

AREAS OF STUDY:

- How has understanding about the physical world changed?
- How is scientific inquiry used to investigate fields, motion or light?

OUTCOMES:

On completion of this unit, students should be able to:

1. Analyse and apply models that explain the nature of light and matter, and use special relativity to explain observations made when objects are moving at speeds approaching the speed of light.
2. Design and conduct a scientific investigation related to fields, motion or light, and present an aim, methodology and method, results, discussion and a conclusion in a scientific poster.

ASSESSMENT:

Assessment Tasks:

- Comparison and evaluation of two solutions to a problem, two explanations of a physics phenomenon or concept, or two methods and/or findings from practical activities.
- Communication of the design, analysis and findings of a student-designed and student-conducted scientific investigation through a structured scientific poster and logbook entries.

Final assessment: S or N based on demonstrated achievement of the outcomes specified for the unit.

School-Assessed Coursework for Unit 3 will contribute 30% to the study score, Unit 4 will contribute 20% to the study score and an end-of-year exam will contribute 50% to the study score.