

PHYSICS

Physics is the study of the laws and properties of matter and energy, including the inter-relationships between them. The subject promotes the development of students' ability to conduct scientific investigations and use Physics to explain phenomena and events, relating them to technological and social applications. By looking at the way matter and energy interact through observations, measurements and experiments, physicists gain a better understanding of the underlying laws of nature.

VCE Physics provides for continuing study pathways within the discipline and leads to a range of careers. Physicists may undertake research and development in specialist areas including acoustics, astrophysics and cosmology, atmospheric physics, computational physics, education, energy research, engineering, instrumentation, lasers and photonics, medical physics, nuclear science, optics, pyrotechnics and radiography. Physicists also work in cross-disciplinary areas such as bushfire research, climate science, forensic science, geology, materials science, neuroscience and sports science.

Unit 1

How is Energy Useful to Society?

AREAS OF STUDY:

- How are light and heat explained?
- How is energy from the nucleus utilised?
- What can electricity be used to transfer energy?

OUTCOMES:

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

1. Model, investigate and evaluate the wave like nature of light, thermal energy and the emission and absorption of light by matter.
2. Explain, apply and evaluate nuclear radiation, radioactive decay and nuclear energy.
3. Investigate and apply a basic DC circuit model to simple battery operated devices and household electrical systems, apply mathematical models to analyse circuits, and describe the safe and effective use of electricity by individuals and the community.

ASSESSMENT:

Tasks for assessment are a combination of the following:

- Scientific investigation/modelling/simulation activity
- A report of a selected physics phenomenon or concept
- A media analysis/response
- An infographic
- Problem-solving involving physics concepts and/or skills
- An analysis, including calculations, of physics concepts applied to real-world contexts
- A scientific poster

Unit 2

How Does Physics Help us Understand the World?

AREAS OF STUDY:

- How is motion understood?
- Options study: choose 1 from 18 options to develop a deeper understanding of an area of interest within physics.
- How do physicists investigate questions

OUTCOMES:

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

1. Investigate, analyse and mathematically model and apply force, energy and motion.
2. Investigate and apply physics knowledge to develop and communicate an informed response to a contemporary societal issue or application related to a selected option.
3. To draw an evidence-based conclusion from primary data generated from a student-adapted or student designed scientific investigation related to a selected physics question.

ASSESSMENT:

See Unit 1