

VCE Physics

Subject Description

This subject introduces students to an understanding of physical activity and sedentary In Physics, students gain an appreciation of the laws of nature from the smallest scale of the atomic nucleus to the largest scale, that of the entire universe. Physics provides an excellent grounding for a large number of fulfilling careers and is a very suitable subject for inquisitive students who have sound capabilities in mathematics.

Students need to have satisfactorily completed Unit 1 and 2 Physics prior to studying Units 3 and 4.

UNIT 1

Students will study Radiation from the Nucleus, which covers types of radiation and their effects; and electricity where students apply a basic DC circuit model to simple battery operated devices and an AC model to household electrical systems. A detailed study of astronomy will also be undertaken.

LEARNING ACTIVITIES

Discussions of physical phenomena, worksheets, group activities, text questions, practical activities and participation in an astronomy evening.

KEY SKILLS REQUIRED

Strong mathematical skills in the areas of arithmetic calculations, substitution, transposing and analysing data. The ability to predict, observe and explain physical events is also important.

ASSESSED TASKS

Topic tests, practical work, an extended practical investigation, research, team based multimedia presentations and an end of semester written examination.

UNIT 2

In this unit students describe and explain the movement of various objects in terms of kinematics, forces, momentum, energy and power (motion), waves and optics – looking at models that help explain the behaviour of light. A detailed study of astrophysics will also be undertaken.

LEARNING ACTIVITIES

Discussions of physical phenomena, worksheets, group activities, text questions and practical activities.

KEY SKILLS REQUIRED

Strong mathematical skills in the areas of arithmetic calculations, substitution, transposing and analysing data. The ability to predict, observe and explain physical events is also important.

ASSESSED TASKS

Topic tests, practical work, an extended practical investigation, research, team based multimedia presentations and an end of semester written examination.

UNIT 3

Students study motion, electronics, photonics and materials and their use in structures. Motion covers basic descriptions on movement, forces, momentum and energy, projectile motion, circular motion and gravity. Electronics covers basic circuits as well as diodes and amplifier characteristics, with photonics introducing students to opto-electrical devices such as those used in fibre optic communications. Characteristics of construction materials and the effects of forces in and on structures are also covered.

LEARNING ACTIVITIES

Experimental work including interactive simulation activities, text questions, quizzes, homework sheets and other relevant tasks. Guest speakers are used when available and relevant to topics or career paths.

KEY SKILLS REQUIRED

Motion and electric circuit skills and knowledge from Units 1 and 2, data interpretation and analysis, ability to use and manipulate formulae and enquiry based skills.

ASSESSED TASKS

Extended practical investigation, report based on practical work and tests.

UNIT 4

Students study electric power, sound and ideas about light and matter. Electric power covers the connection between magnetic fields and electric currents involved in the operation of electric motors, generators and the transmission of electric power. The wave nature of sound is studied and applied to sound recording and reproduction. Based on experimental observations, models for light and for matter are discussed and applied, in particular the wave model, particle model and wave-particle duality.

LEARNING ACTIVITIES

Experimental work including interactive simulation activities, text questions, quizzes, homework sheets and other relevant tasks. Guest speakers are used when available and relevant to topics or career paths.

KEY SKILLS REQUIRED

Knowledge and skills of electric circuits, waves and motion from Units 1 and 2, data interpretation and analysis, ability to use and manipulate formulae and enquiry based skills.

ASSESSED TASKS

Report based on a given scenario, report based on practical work, tests and an end of year written examination.

VCAA ASSESSMENT – The overall Study Score will consist of:

School Assessed Coursework (40%), 2½ hour written examination in November (60%).