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# VCE UNITS INFORMATION

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## VCE Physics Units 1 and 2

### CONTENT

#### Unit 1

In this unit, students study thermodynamic principles, electricity and electric circuits and the origin of matter and how energy can be obtained from atoms. Students consider thermal concepts by investigating heat, probe common analogies used to explain electricity and consider the origins and formation of matter. Students use thermodynamic principles to explain phenomena related to changes in thermal energy. They apply thermal laws when investigating energy transfers within and between systems, and assess the impact of human use of energy on the environment. Students examine the motion of electrons and explain how it can be manipulated and utilised. They explore current scientifically accepted theories that explain how matter and energy have changed since the origins of the Universe.

#### Unit 2

In this unit, students study the principles of motion, the uses of electromagnetic and particle radiation in human health, and undertake a student-designed investigation of their choice. They investigate the ways in which forces are involved in moving objects and in keeping objects stationary. They study the application of wave and particle radiation to observe and monitor the functioning of the human body. A student designed practical investigation relates to content drawn from area of Study 1 and/or area of Study 2 and is undertaken in Area of Study 3. Students study the relationship between dependent and independent variables in a topic of choice and produce a practical report that presents aims, procedures, results, analysis, discussion and conclusions.

### OUTCOMES

#### Unit 1

- Students should be able to apply thermodynamic principles to analyse, interpret and explain changes in thermal energy in selected contexts, and describe the environmental impact of human activities with reference to thermal effects and climate science concepts
- Students should be able to 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
- Students should be able to explain the origins of atoms, the nature of subatomic particles and how energy can be produced by atoms

#### Unit 2

- Students should be able to investigate, analyse and mathematically model the motion of particles and bodies
- Students should be able to use nuclear physics concepts to describe and analyse applications of electromagnetic radiation and particle radiation in medical diagnosis and treatment
- Students should be able to design and undertake an investigation of a physics question related to the scientific inquiry processes of data collection and analysis, and draw conclusions based on evidence from collected data

### ASSESSMENT

In both units, practical work and the analysis of data plays a central role in assessment in each area of study. Homework and research assignments, tests and examinations also form part of the total assessment.