

**ALEXANDRA SECONDARY COLLEGE – SCIENCE 902  
COURSE OUTLINE 2019**

Week	Topic	Learning Focus	Victorian Curriculum Strands & Sub strands
1-5	Electricity	<ul style="list-style-type: none"> <li>• Identify different forms of energy, describe energy transformations and calculate percentage energy efficiencies.</li> <li>• Provide examples of circuit components and their functions, identify their diagram symbols and draw simple electrical circuits.</li> <li>• Investigate and compare series and parallel circuits</li> <li>• Investigating Ohm’s Law using circuit kits and virtual circuit activities</li> <li>• Investigate different methods of electricity production including hydro, wind, solar and galvanic cells.</li> <li>• Use electricity safely and describe how fuses, circuit breakers and safety switches prevent fire and electrocution</li> <li>• Investigate how a house is wired and ways to reduce electricity use in the home</li> <li>• Investigate galvanic and electrolytic cells and carry out electroplating</li> <li>• Describe the properties of the main forms of electromagnetic radiation.</li> </ul>	Electric circuits can be designed for diverse purposes using different components; the operation of circuits can be explained by the concepts of voltage and current (VCSSU130)
6- 8	Electromagnetism	<ul style="list-style-type: none"> <li>• Explain how wires carrying an electric current generate a magnetic field</li> <li>• Explain how electricity can be used to create a magnet and how to alter the strength of such a magnet</li> <li>• Investigate how electricity and magnets are used to produce movement</li> <li>• Describe how an electric motor works and identify and describe everyday devices which have electric motors such as hair dryers and washing machines.</li> <li>• Create a simple electric motor</li> <li>• Describe the process of electromagnetic induction</li> <li>• Distinguish between alternating current and direct current and how they are generated</li> <li>• Explain the use of electromagnetic fields in technology and medicine.</li> </ul>	The interaction of magnets can be explained by a field model; magnets are used in the generation of electricity and the operation of motors (VCSSU131)

9-12	Chemistry –Atoms & Radioactivity	<ul style="list-style-type: none"> <li>• Describe the structure of atoms in terms of the nucleus, protons neutrons and electrons.</li> <li>• Explain in simple terms how alpha and beta particles and gamma radiation are released from unstable atoms</li> <li>• Describe the effects of radiation on the human body</li> <li>• Investigate how radioactivity is measured</li> <li>• Model radioactive decay</li> <li>• Give examples of how radioactive elements are used in a range of applications.</li> </ul>	<p>All matter is made of atoms which are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms VCSSU122</p>
13-16	Earth Science - Plate Tectonics	<ul style="list-style-type: none"> <li>• Describe how heat energy and convection currents in the Earth’s mantle cause the movement of tectonic plates</li> <li>• Recognise the major tectonic plates on a world map relative to Australia</li> <li>• Model plate interactions and sea-floor spreading</li> <li>• Relate the occurrence of earthquakes and volcanoes to plate boundaries</li> <li>• Analyse seismic waves to locate an earthquake</li> <li>• Describe the evidence that support the theory of plate tectonics</li> </ul>	<p>The theory of plate tectonics explains global patterns of geological activity and continental movement VCSSU127</p>
17-20	Biology – Ecosystems	<ul style="list-style-type: none"> <li>• Describe ecosystems in terms of abiotic and biotic factors and give examples of these factors</li> <li>• Describe a variety of relationships between organisms in ecosystems</li> <li>• Identify factors that influence population size and use a number of different methods to estimate population sizes</li> <li>• Define biological control and give examples of its use in Australia including the use of Myxomatosis to control rabbits.</li> <li>• Explain the processes of photosynthesis and respiration</li> <li>• Explain how matter and energy flow through ecosystems</li> <li>• Describe some of the adaptations some Australian plants have to fire</li> <li>• Provide examples of natural events and human activity that can disrupt an ecosystem</li> <li>• Describe the enhanced greenhouse effect and its causes</li> <li>• Provide examples of management practices, both modern and historical</li> </ul>	<p>Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems (VCSSU121)</p> <p>Selection and use of appropriate equipment and technologies to systematically collect and record accurate and reliable data, and use of repeat trials to improve accuracy, precision and reliability (VCSSU136)</p>

