

	Section	Number of Students	Year Level(s)	Subject(s)	Curriculum Relevance
Nuclear	•Turntables •Inverse Square Law •Half Life	8	9,10,11	Physics, Chemistry	<u>Year 9</u>
		8	9,10,11		<i>Science Understanding</i>
		∞	9,10,11		Chemical sciences
			<ul style="list-style-type: none"> • All matter is made of atoms which are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms (ACSSU177) 		
			<i>Science as a Human Endeavour</i>		
			Use and influence of science		
			<ul style="list-style-type: none"> • People can use scientific knowledge to evaluate whether they should accept claims, explanations or predictions (ACSHE160) 		
			<i>Science Inquiry Skills</i>		
			Processing and analysing data and information		
			<ul style="list-style-type: none"> • Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (ACSIS169) • Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (ACSIS170) 		
			<u>Year 10</u>		
			<i>Science as a Human Endeavour</i>		
			Use and influence of science		
			<ul style="list-style-type: none"> • People can use scientific knowledge to evaluate whether they should accept claims, explanations or predictions (ACSHE194) 		

					<p>Planning and conducting</p> <ul style="list-style-type: none"> • Plan, select and use appropriate investigation methods, including field work and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods (AC SIS199) • Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data (AC SIS200)
					<p>Processing and analysing data and information</p> <ul style="list-style-type: none"> • Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (AC SIS203) • Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (AC SIS204)
					<p><u>Year 11</u> Unit 1: Area of Study 1: Nuclear Physics and Radioactivity</p> <ul style="list-style-type: none"> • Explain why some atomic nuclei are stable and others are not • Describe the radioactive decay of unstable nuclei in terms of half-life • Describe the detection and penetrating properties of α, β and γ radiation • Describe the effects of α, β and γ radiation on humans • Describe the effects of ionising radiation on living things and the environment • Describe the risks for living things and/or the environment associated with the use of nuclear reactions and radioactivity
Environment	Solar Hot Water	∞	9,10,11	Physics	<u>Year 9</u>
	Cyclone	$\infty/1$	9,10,11	Physics	<i>Science Understanding</i>
	Wind Tunnel	1	9,10,11	Physics	Physical sciences

				<ul style="list-style-type: none"> • Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)
				Science as a Human Endeavour
				Use and influence of science
				<ul style="list-style-type: none"> • The values and needs of contemporary society can influence the focus of scientific research (ACSHE228)
				Science Inquiry Skills
				Planning and conducting
				<ul style="list-style-type: none"> • Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data (AC SIS200)
				Processing and analysing data and information
				<ul style="list-style-type: none"> • Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (AC SIS169) • Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (AC SIS170)
				<u>Year 10</u>
				Science Understanding
				Physical sciences
				<ul style="list-style-type: none"> • Energy conservation in a system can be explained by describing energy transfers and transformations (ACSSU190)
				Science as a Human Endeavour

					<p>Use and influence of science</p> <ul style="list-style-type: none"> • The values and needs of contemporary society can influence the focus of scientific research (ACSHE228)
					<p>Science Inquiry Skills</p>
					<p>Planning and conducting</p> <ul style="list-style-type: none"> • Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data (ACSIS200)
					<p>Processing and analysing data and information</p> <ul style="list-style-type: none"> • Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (ACSIS169) • Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (ACSIS170)
					<p>VCE Units 1&2: Detailed study 3.5: Investigations: Sustainable Energy Sources</p> <ul style="list-style-type: none"> • explain the terms sustainable and renewable in terms of energy use • compare different renewable energy sources and investigate one experimentally • analyse the potential of the system being investigated to make a significant contribution to the community's energy requirements, including the benefits, limitations and environmental consequences of the system • evaluate the model system in relation to a real-life problem involving energy supply • interpret information sources to evaluate risks in the development and use of an energy supply system

Structure	eVBL Tomography AFM	1	11,12	Physics	VCE Units 1&2: Detailed study 3.6: Medical Physics
		$\infty/1$	11,12	Physics	<ul style="list-style-type: none"> describe and evaluate the use of lasers as intense energy sources for medical treatments describe and compare processes of, and images produced by, medical imaging using two or more of ultrasound, X-rays, CT, MRI and PET
		1	11,12	Physics	VCE Units 3&4: Detailed study 3.4: Synchrotron and its Applications
					<ul style="list-style-type: none"> compare the characteristics of synchrotron radiation, including brightness, spectrum and divergence with the characteristics of electromagnetic radiation from other sources including lasers and X-ray tubes explain, using the characteristics of brightness, spectrum and divergence, why for some experiments synchrotron radiation is preferable to laser-light and radiation from X-ray tubes

Sources:

Year 9 and 10

<http://www.australiancurriculum.edu.au/Science/Curriculum/F-10>

VCE Units 1-4

Physics Study Design