**Year Level: 8** **Subject: Science**

**Semester: 1**

| Weeks | Unit | Learning Focus | Victorian Curriculum |
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| 1-3 | Introduction to Year 8 Science, Revision of Safety Rules, Scientific Method & Investigations | • Demonstrate safe behaviour in the laboratory.<br>• Define fair test, variable, dependant variable, independent variable, controlled variables and hypothesis<br>• Describe the key features of a fair test<br>• Provide examples of dependant, independent and controlled variables from scenarios<br>• Explain how to formulate a hypothesis<br>• Demonstrate the ability to follow experimental methods<br>• Demonstrate sound experimental design<br>• List the main sections of an experimental report and describe the information required in each section<br>• Write a testable hypothesis<br>• Conduct investigations safely<br>• Measure and control variables<br>• Construct and interpret graphs | Identify questions, problems and claims that can be investigated scientifically and make predictions based on scientific knowledge VCSIS107<br>Use scientific knowledge and findings from investigations to identify relationships, evaluate claims and draw conclusions VCSIS111<br>Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method VCSIS112<br>Communicate ideas, findings and solutions to problems including identifying impacts and limitations of conclusions and using appropriate scientific language and representations VCSIS113 |
| 4-8 | Rock Cycle | • Understand the structure of volcanoes and the formation of igneous rocks.<br>• Understand the influence of cooling speed on crystal formation<br>• Explain the formation of sedimentary and metamorphic rocks<br>• Identify a range of rock types based on observable properties.<br>• Use the rock cycle to describe the relationships between igneous, metamorphic and sedimentary rocks.<br>• Outline the uses of igneous, metamorphic and sedimentary rocks<br>• Recognise that rocks are a collection of different minerals and identify the properties of different minerals | Sedimentary, igneous and metamorphic rocks contain minerals and are formed by processes that occur within Earth over a variety of timescales VCSSU102 |

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| | | • Understand that some rocks and minerals, such as ores, provide valuable resources. | |
| 9-10 | Cells | • Provide examples of unicellular and multicellular organisms<br>• Explain the key concepts of the cell theory<br>• Describe the differences in structure and function between electron microscopes and light microscopes<br>• Name and identify all main components of a compound light microscope and calculate the magnification<br>• Demonstrate the ability to focus a compound light microscope.<br>• Describe the key differences between prokaryotic and eukaryotic cells and provide examples of both<br>• Identify parts of a cell and describe their functions<br>• Identify the key differences in structures of plant and animal cells | Cells are the basic units of living things and have specialised structures and function VCSSU092<br>Scientific knowledge and understanding of the world changes as new evidence becomes available; science knowledge can develop through collaboration and connecting ideas across the disciplines and practice of science VCSSU089 |
| 11-14 | Body Systems 1 – Digestion | • Explain the role of carbohydrates, proteins and fats in the human diet, give examples of foods in which they are found and be able to test for their presence in foods<br>• Identify parts of the human digestive system and describe their major functions<br>• Identify types of teeth, describe their functions and be able to recognise the skulls of herbivores, carnivores, insectivores and omnivores using the teeth<br>• Distinguish between physical and chemical digestion and give examples of each<br>• Describe the functions of enzymes and bile, and factors affecting enzyme action.<br>• Explain the function of a control in an experiment<br>• Explain how food moves through the digestive system (peristalsis) | Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce VCSSU094 |

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| | | • Model the process of digestion using simple resources such as bread, water & bicarb soda<br>• Use an IT resource to create, narrate and illustrate a story detailing the events in the life of a hamburger, from its initial production to the end of its journey through the human digestive system.<br>• Explain how water, minerals and sugars are transported in plants | |
| 15-18 | Chemical Reactions | • Explain the difference between elements and compounds.<br>• Describe key features of the Periodic Table and list the first 20 elements<br>• Identify the differences between chemical and physical changes.<br>• Identify evidence that a chemical change has taken place.<br>• Write word equations and simple chemical equations for chemical reactions.<br>• Understand the factors affecting the rate of a chemical reaction. | Chemical change involves substances reacting to form new substances VCSSU098 |
| 19-21 | Body Systems 2 – Heart, Lungs & Kidneys | • Investigate the structure and function of the heart, blood and blood vessels.<br>• Dissect a sheep's heart.<br>• Outline the causes of heart disease.<br>• Describe the structure and function of the respiratory system<br>• Explain the workings of a lung model<br>• Examine a sheep's pluck<br>• Describe the structure and function of the kidneys and their role in maintaining the body's water balance.<br>• Dissect a sheep's kidney. | Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce VCSSU094 |

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| | | • Describe kidney dialysis | |

**Year Level: 8** **Subject: Science**
**Semester: 2**

| Week | Topic | Learning Focus | Victorian Curriculum |
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| 1-2 | Heart | Investigate the structure and function of the heart, blood and blood vessels.<br>Dissect a sheep's heart.<br>Outline the causes of heart disease. | Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce VCSSU094 |
| 3-4 | Lungs | Describe the structure and function of the respiratory system<br>Examine a sheep's pluck | |
| 5 | Kidneys | Describe the structure and function of the kidneys and their role in maintaining the body's water balance.<br>Dissect a sheep's kidney.<br>Describe kidney dialysis | |
| 6 | Body systems revision & test | Revise the structure and function of the circulatory and respiratory systems and the kidneys and complete a written test. | |
| 7 | Elements and the Periodic Table | Explain the difference between elements and compounds.<br>Describe key features of the Periodic Table and list the first 20 elements. | Chemical change involves substances reacting to form new substances VCSSU098 |
| 8 | Physical and chemical changes | Identify the differences between chemical and physical changes.<br>Identify evidence that a chemical change has taken place. | |
| 9 | Chemical reactions | Write word equations and simple chemical equations for chemical reactions. | |

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| 10 | Rates of chemical reactions. Chemistry test | Understand the factors affecting the rate of a chemical reaction.<br>Use science equipment and chemicals safely. | |
| 11-12 | Energy | Describe the different forms of energy including movement (kinetic energy), heat and potential energy.<br>Use flow diagrams to show changes between different forms of energy.<br>investigating the energy transformations in devices, such as toys<br>Explain the Law of Conservation of Energy | Energy appears in different forms including movement (kinetic energy), heat, light, chemical energy and potential energy; devices can change energy from one form to another VCSSU104 |
| 13-15 | Energy in the home | Investigate energy efficiency<br>Conduct an audit of electricity usage at home and identify ways of saving energy<br>Design and test the effectiveness of an energy efficient house<br>Investigating the development of solar-powered vehicles | Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations VCSSU090 |
| 16 | Science investigations | Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge. | Identify questions, problems and claims that can be investigated scientifically and make predictions based on scientific knowledge VCSIS107<br>Use scientific knowledge and findings from investigations to identify relationships, evaluate claims and draw conclusions VCSIS111<br>Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method VCSIS112<br>Communicate ideas, findings and solutions to problems including identifying impacts and limitations of conclusions and using appropriate scientific language and representations VCSIS113 |
| 17 | Revision & Exam | Revise concepts from the Year 8 units. | |

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| 18-20 | Science investigations (cont) | Carry out a scientific investigation. | |