

## Year 7 - Science 2022

TERM 1		
<b>TIMING</b> Weeks: 8	<p><b>How Scientists work:</b> In this unit, students will be learning scientific and laboratory skills and solving scientific problems. These problems have individual focuses that are linked to a separation technique and a part of the scientific method. By the end of this unit students will have laboratory skills, a clear understanding of the scientific method and ability to problem solve to separate a mixture.</p>	
	<b>UNIT OVERVIEW</b>	<b>ASSESSMENT</b>
	<ul style="list-style-type: none"> <li>• Identify questions and problems that can be tested or researched and makes predictions based on scientific knowledge</li> <li>• Collaboratively and individually produce a plan to investigate questions and problems</li> <li>• Follow a sequence of instructions to safely undertake a range of investigation types, collaboratively and individually</li> <li>• Process and analyse data from a first-hand investigation and secondary sources to identify trends, patterns and relationships, and draw conclusions</li> <li>• Describe the observed properties and behaviour of matter, using scientific models and theories about the motion and arrangement of particles</li> <li>• Explain how scientific understanding of, and discoveries about, the properties of elements, compounds and mixtures relate to their uses in everyday life</li> <li>• Demonstrate confidence in making reasoned, evidence-based decisions about the current and future use and influence of science and technology, including ethical considerations</li> <li>• Extract information from diagrams, flowcharts, tables, databases, other texts, multimedia resources and graphs including histograms and column, sector and line graphs</li> <li>• Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships, including using digital technologies as appropriate</li> </ul>	<p>Task Number: 1</p> <p>Nature of Task: Working Scientifically</p> <p>Percentage: 30</p> <p>Week: 8</p> <p>Reported: Semester 1</p>
<b>TIMING</b> Weeks: 3	<p><b>Chemical World:</b> This topic explores the properties of matter and how they behave differently in different states. Students will be introduced to the concept of models by considering how the particle model describes solids, liquids and gases and the transitions between them. Students will explore further properties of matter including the concept of density and expansion/contraction of solids and gases.</p>	
	<b>UNIT OVERVIEW</b>	<b>ASSESSMENT</b>
	<ul style="list-style-type: none"> <li>• Describe observed properties &amp; behaviour of matter using scientific models &amp; theories about motion &amp; arrangement of particles.</li> <li>• Explain how scientific understanding of, and discoveries about the properties of elements, compounds and mixtures relate to their uses in everyday life</li> <li>• Identify questions and problems that can be tested or researched and makes predictions based on scientific knowledge</li> <li>• Follow a sequence of instructions to safely undertake a range of investigation types, collaboratively and individually</li> <li>• Processes and analyses data from a first-hand investigation and secondary sources to identify trends, patterns and relationships, and draw conclusions</li> <li>• Describe the behaviour of matter in terms of particles that are continuously moving and interacting</li> <li>• Relate an increase or decrease in the amount of heat energy possessed by particles to changes in particle movement</li> <li>• Use a simple particle model to predict the effect of adding or removing heat on different states of matter</li> <li>• Relate changes in the physical properties of matter to heat energy and particle movement that occur during observations of evaporation, condensation, boiling, melting and freezing</li> <li>• Explain density in terms of a simple particle model</li> </ul>	

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TERM 2		
<b>TIMING</b> Weeks: 8	<b>Chemical World:</b> The second section of this topic focuses on common mixtures and the various techniques that can be used to separate substances in a mixture. Students will perform experiments to understand the mechanisms of these separation techniques and consider the applications of separation techniques in industry.	
	<b>UNIT OVERVIEW</b>	<b>ASSESSMENT</b>
	<ul style="list-style-type: none"> <li>• Describe the observed properties and behaviour of matter, using scientific models and theories about the motion and arrangement of particles.</li> <li>• Explain how scientific understanding of, and discoveries about the properties of elements, compounds and mixtures relate to their uses in everyday life</li> <li>• Describe aqueous mixtures in terms of solute, solvent and solution</li> <li>• Relate a range of techniques used to separate the components of some common mixtures to the physical principles involved in each process, including filtration, decantation, evaporation, crystallisation, chromatography and distillation</li> <li>• Investigate the application of a physical separation technique used in everyday situations or industrial processes, e.g., water filtering, sorting waste materials, extracting pigments or oils from plants, separating blood products or cleaning up oil spills</li> <li>• Describe the importance of water as a solvent in daily life, industries and the environment research how a knowledge of physical properties of natural materials is used by Aboriginal and Torres Strait Islander peoples in everyday life, e.g., tools, weapons, utensils, shelter, housing or bush medicine</li> <li>• Outline how some historical developments have contributed to evidence that has advanced our understanding of the particle model of matter</li> </ul>	Task Number: 2 Nature of Task: Research Task Percentage: 20 Week: 1 Reported: Semester 1  Task Number: 3 Nature of Task: Topic test: Chemical World Percentage: 50 Week: 5 Reported: Semester 1
<b>TIMING</b> Weeks: 2	<b>Cells and Classification:</b> Living things can be grouped with others that share similar characteristics. Scientists classify elements, rocks and planets. In the first section of this topic, students will explore how biologists classify living organisms such as plants and animals by their features. Students will design simple keys that classify plants and animals according to their similarities and differences.	
	<b>UNIT OVERVIEW</b>	<b>ASSESSMENT</b>
	<ul style="list-style-type: none"> <li>- Relate the structure and function of living things to their classification, survival, and reproduction</li> <li>- Identify reasons for classifying living things</li> <li>- Classify a variety of living things based on similarities and differences in structural features</li> <li>- Identify some examples of groups of micro-organisms</li> <li>- Outline the structural features used to group living things, including plants, animals, fungi, and bacteria</li> <li>- Explain how the features of some Australian plants and animals are adaptations for survival and reproduction in their environment</li> <li>- Design and construct simple keys to identify a range of living things.</li> </ul>	

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### TERM 3

	<b>TERM 3</b>	
<b>TIMING</b> Weeks: 7	<p><b>Cells and Classification:</b> Cells are the building blocks that make up all living things. Cells are microscopic and the discovery of cells using microscopes have enabled scientists to investigate their structure and how they can cause disease. In the second section of this topic, students will explore how microscopes can be used to look at cells. Students will use microscopes to compare the structural differences between animal and plant cells. Students will be required to understand the properties and role of each part of the cell through constructing a cell model.</p>	
	<b>UNIT OVERVIEW</b>	<b>ASSESSMENT</b>
	<ul style="list-style-type: none"> <li>- Identify that living things are made of cells</li> <li>- Identify that different types of cells make up the tissues, organs and organ systems of multicellular organisms</li> <li>- Identify structures within cells, including the nucleus, cytoplasm, cell membrane, cell wall and chloroplast, and describe their functions</li> <li>- Distinguish between unicellular and multicellular organisms</li> <li>- Identify that new cells are produced by cell division</li> <li>- Outline the role of cell division in growth, repair and reproduction in multicellular organisms</li> </ul>	Task Number: 4  Nature of Task: Cell Model  Percentage: 40  Week: 7  Reported: Semester 2
<b>TIMING</b> Weeks: 3	<p><b>Force Fields:</b> Forces act on you, and you put forces on objects every day. In the first section of this topic, students will explore types of forces including friction and buoyancy. Students will use draw diagrams to predict unbalanced forces in everyday situations. Students will consider how safety gear such as helmets, footwear and seatbelts can reduce forces on the person.</p>	
	<b>UNIT OVERVIEW</b>	<b>ASSESSMENT</b>
	<ul style="list-style-type: none"> <li>- Identify changes that take place when particular forces are acting</li> <li>- Predict the effect of unbalanced forces acting in everyday situations</li> <li>- Describe some examples of technological developments that have contributed to finding solutions to reduce the impact of forces in everyday life, e.g., car safety equipment and footwear design</li> <li>- Analyse some everyday common situations where friction operates to oppose motion and produce heat</li> <li>- Investigate factors that influence the size and effect of frictional forces</li> </ul>	

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### TERM 4

	<b>TERM 4</b>	
<b>TIMING</b> Weeks: 5	<p><b>Force Fields:</b> Students will be introduced to the concept of a “field” and consider how forces can act at a distance such as gravity, magnetic and electrostatic forces. Students will learn to contrast the terms ‘mass and weight’ and will investigate how magnets and electromagnets are used in everyday devices.</p>	
	<b>UNIT OVERVIEW</b>	<b>ASSESSMENT</b>
	<ul style="list-style-type: none"> <li>- Use the term 'field' in describing forces acting at a distance</li> <li>- Describe everyday situations where gravity acts as an unbalanced force</li> <li>- Identify that the Earth's gravity pulls objects towards the centre of the Earth</li> <li>- Distinguish between the terms 'mass' and 'weight'</li> <li>- Describe the behaviour of magnetic poles when they are brought close together</li> <li>- Investigate how magnets and electromagnets are used in some everyday devices or technologies used in everyday life</li> <li>- Identify ways in which objects acquire electrostatic charge</li> <li>- Describe the behaviour of charged objects when they are brought close to each other</li> <li>- Investigate everyday situations where the effects of electrostatic forces can be observed, e.g., lightning strikes during severe weather and dust storms</li> <li>- Investigate characteristics of specific forces in terms of size and direction</li> </ul>	<p>Task Number: 5</p> <p>Nature of Task: Semester 2 Examination</p> <p>Percentage: 60</p> <p>Week: 3</p> <p>Reported: Semester 2</p>
<b>TIMING</b> Weeks: 6	<p><b>Our planet:</b> In this topic, students look at features of astronomy and the sky. They will learn to explain earth’s day and Night, seasons and eclipses, as well as compare current and historical models of the solar system. Students will also investigate forces in relation to the earth by identifying changes that take place when particular forces are acting, be able to use the term ‘field’ in describing forces acting at a distance and explain that earth’s Gravity pulls objects towards the centre of the Earth.</p>	
	<b>UNIT OVERVIEW</b>	<b>ASSESSMENT</b>
	<ul style="list-style-type: none"> <li>- Demonstrate, using examples, how ideas by people from different cultures have contributed to the current understanding of the solar system</li> <li>- Compare historical and current models of the solar system to show how models are modified or rejected as a result of new scientific evidence</li> <li>- Describe some examples of how technological advances have led to discoveries and increased scientific understanding of the solar system</li> <li>- Explain that predictable phenomena on the Earth, including day and night, seasons and eclipses are caused by the relative positions of the sun, the Earth and the moon</li> <li>- Describe the effect of the forces of the sun and moon on the hydrosphere</li> </ul>	