



Links to the Western Australian Curriculum

This scope and sequence provides an overview of how *ScienceWorld 9* covers the Western Australian Curriculum. The focus is on the Science Understanding strand, although only some of the Science as a Human Endeavour content and elaborations are covered in this version of the scope and sequence. Included online in the teacher support are curriculum scope and sequence guides that detail how *ScienceWorld* covers the Western Australian Curriculum content descriptions across all four books, and these also include a full mapping of the Science as a Human Endeavour sub-strand, and the Science Inquiry Skills.

Abbreviations:

SHE: Science as a Human Endeavour

BS: Biological Sciences

CS: Chemical Sciences

ESS: Earth and Space Sciences

PS: Physical Sciences

ScienceWorld 9

Chapter & Unit titles	Science Understanding	Elaborations
1 Science is investigating		
1.1 Steps in investigating	Science Inquiry Skills	
1.2 Collecting data	Science Inquiry Skills	
1.3 Processing data	Science Inquiry Skills	
2 Light and sound		
2.1 Properties of light and sound	PS: Energy transfer through different mediums can be explained using wave and particle models (ACSSU182) BS: Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes in their environment (ACSSU175)	<ul style="list-style-type: none"> exploring how images can change when the arrangement of the mirror or lens system is altered exploring the mechanism of the human eye and corrective technologies examining the specialized cells and tissues involved in the structure and function of particular organs
2.2 Light and colour	PS: Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)	<ul style="list-style-type: none"> observing the spread and order of colours in the visible spectrum
2.3 Light and sound as waves	PS: Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)	<ul style="list-style-type: none"> discussing the wave and particle models and how they are useful for understanding aspects of phenomena exploring the properties of waves, and situations where energy is transferred in the form of waves, such as sound and light exploring how and why the movement of energy varies according to the medium through which it is transferred

2.4 Applications of sound	<p>PS: Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)</p> <p>BS: Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes in their environment (ACSSU175)</p>	<ul style="list-style-type: none"> examining the specialized cells and tissues involved in the structure and function of particular organs
3 Inside the atom		
3.1 Atomic structure	<p>CS: All matter is made of atoms that are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms (ACSSU177)</p>	<ul style="list-style-type: none"> describing and modelling the structure of atoms in terms of nucleus, protons, neutrons and electrons comparing the mass and charge of protons, neutrons and electrons
3.2 Nuclear reactions	<p>CS: All matter is made of atoms that are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms (ACSSU177)</p> <p>CS: Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction mass is not created or destroyed (ACSSU178)</p>	<ul style="list-style-type: none"> describing in simple terms how alpha and beta particles and gamma radiation are released from unstable atoms recognising that the conservation of mass in a chemical reaction can be demonstrated by simple chemical equations
3.3 Radioactivity	<p>CS: All matter is made of atoms that are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms (ACSSU177)</p>	<ul style="list-style-type: none"> describing in simple terms how alpha and beta particles and gamma radiation are released from unstable atoms
4 Introducing electric circuits		
4.1 Electrical charges	<p>PS: Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)</p>	
4.2 Electric currents	<p>PS: Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)</p>	<ul style="list-style-type: none"> investigating factors that affect the transfer of energy through an electric circuit
4.3 Electric circuits	<p>PS: Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)</p>	<ul style="list-style-type: none"> investigating parallel and series circuits and measuring voltage drops across and currents through various components
5 Body in balance		
5.1 The nervous and endocrine systems	<p>BS: Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes in their environment (ACSSU175)</p>	<ul style="list-style-type: none"> describing how the requirements for life (oxygen, nutrients, water and removal of waste) are provided through the coordinated function of body systems such as the respiratory, circulatory, digestive, nervous and excretory systems identifying responses using nervous and endocrine systems
5.2 Plant responses	<p>BS: Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes in their environment (ACSSU175)</p>	<ul style="list-style-type: none"> describing how the requirements for life (oxygen, nutrients, water and removal of waste) are provided through the coordinated function of body systems such as the respiratory, circulatory, digestive, nervous and excretory systems



5.3 Keeping the balance	BS: Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes in their environment (ACSSU175)	<ul style="list-style-type: none"> explaining how body systems work together to maintain a functioning body using models, flow diagrams or simulations
6 Dynamic Earth		
6.1 Inside the Earth	ESS: The theory of plate tectonics explains global patterns of geological activity and continental movement (ACSSU180)	
6.2 Earthquakes	ESS: The theory of plate tectonics explains global patterns of geological activity and continental movement (ACSSU180)	<ul style="list-style-type: none"> relating the occurrence of earthquakes and volcanic activity to constructive and destructive plate boundaries
6.3 Earth plates	ESS: The theory of plate tectonics explains global patterns of geological activity and continental movement (ACSSU180)	<ul style="list-style-type: none"> recognizing the major plates on a world map modelling sea floor spreading relating the occurrence of earthquakes and volcanic activity to constructive and destructive plate boundaries considering the role of heat energy and convection currents in the movement of tectonic plates relating the extreme age and stability of a large part of the Australian continent to its plate tectonic history
7 Everyday Reactions		
7.1 Acids and bases	CS: Chemical reactions, including combustion and the reactions of acids, are important in both non-living and living systems and involve energy transfer (ACSSU179)	<ul style="list-style-type: none"> investigating reactions of acids with metals, bases, and carbonates
7.2 The pH scale	CS: Chemical reactions, including combustion and the reactions of acids, are important in both non-living and living systems and involve energy transfer (ACSSU179)	<ul style="list-style-type: none"> investigating reactions of acids with metals, bases, and carbonates
7.3 Reactions of acids and bases	<p>CS: Chemical reactions, including combustion and the reactions of acids, are important in both non-living and living systems and involve energy transfer (ACSSU179)</p> <p>CS: Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction mass is not created or destroyed (ACSSU178)</p>	<ul style="list-style-type: none"> investigating reactions of acids with metals, bases, and carbonates identifying reactants and products in chemical reactions modelling chemical reactions in terms of rearrangement of atoms describing observed reactions using word equations

7.4 Energy in reactions	<p>S: Chemical reactions, including combustion and the reactions of acids, are important in both non-living and living systems and involve energy transfer (ACSSU179)</p> <p>CS: Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction mass is not created or destroyed (ACSSU178)</p>	<ul style="list-style-type: none"> investigating a range of different reactions to classify them as exothermic or endothermic recognising the role of oxygen in combustion reactions and comparing combustion with other oxidation reactions comparing respiration and photosynthesis and their role in biological processes describing how the products of combustion reactions affect the environment considering the role of energy in chemical reactions
8 Energy in ecosystems		
8.1 Living in ecosystems	<p>BS: Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems (ACSSU176)</p>	<ul style="list-style-type: none"> exploring interactions between organisms such as predator/prey, parasites, competitors, pollinators and disease examining factors that affect population sizes such as seasonal changes, destruction of habitats, introduced species
8.2 Matter and energy in food webs	<p>BS: Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems (ACSSU176)</p>	<ul style="list-style-type: none"> considering how energy flows into and out of an ecosystem via the pathways of food webs, and how it must be replaced to maintain the sustainability of the system
8.3 Human impact on ecosystems	<p>BS: Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems (ACSSU176)</p>	<ul style="list-style-type: none"> investigating how ecosystems change as a result of events such as bushfires, drought and flooding
9 Digital technology		
9.1 Communications	<p>PS: Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)</p> <p>SHE: Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific advances (ACSHE158)</p>	<ul style="list-style-type: none"> exploring the properties of waves and situations where energy is transferred in the form of waves, such as sound and light considering how common properties of electromagnetic radiation relate to its uses, such as radar, medicine, mobile phone communications and microwave cooking
9.2 Electronics	<p>SHE: Values and needs of contemporary society can influence the focus of scientific research (ACSHE228)</p>	<ul style="list-style-type: none"> investigating the properties of components such as LEDs, and temperature and light sensors
9.3 Robotics and control	<p>SHE: Values and needs of contemporary society can influence the focus of scientific research (ACSHE228)</p>	<ul style="list-style-type: none"> exploring the use of sensors in robotics and control devices



10 Microbes		
10.1 Microscopic life	Science Inquiry Skills	
10.2 Helpful microbes	Science Inquiry Skills	
10.3 Microbes and disease	BS: Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes in their environment (ACSSU175)	<ul style="list-style-type: none"> investigating the response of the body to changes as a result of the presence of micro-organisms
11 Magnetism and electricity		
11.1 Investigating magnets	Science Inquiry Skills	
11.2 Magnetic fields	Science Inquiry Skills	
11.3 Electricity and magnets	PS: Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)	<ul style="list-style-type: none"> investigating the movement of a magnet and a wire to produce electricity investigating the effect of a magnet on a current from a battery to produce movement