



Links to the Western Australian Curriculum

This scope and sequence provides an overview of how *ScienceWorld 10* 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 10

Chapter and Unit titles	Science Understanding	Elaborations
Chemical sciences		
1 The periodic table		
1.1 The periodic table	CS: The atomic structure and properties of elements are used to organise them in the Periodic Table (ACSSU186)	<ul style="list-style-type: none"> recognising that elements in the same group of the periodic table have similar properties describing the structure of atoms in terms of electron shells explaining how the electronic structure of an atom determines its position in the periodic table and its properties
1.2 Metals	CS: The atomic structure and properties of elements are used to organise them in the Periodic Table (ACSSU186) CS: Different types of chemical reactions are used to produce a range of products and can occur at different rates (ACSSU187)	<ul style="list-style-type: none"> investigating the chemical activity of metals investigating how chemistry can be used to produce a range of useful substances such as fuels, metals and pharmaceuticals using word or symbol equations to represent chemical reactions
1.3 Non-metals	CS: The atomic structure and properties of elements are used to organise them in the Periodic Table (ACSSU186)	<ul style="list-style-type: none"> recognising that elements in the same group of the periodic table have similar properties
2 Rearranging atoms		
2.1 Chemical bonds	CS: Different types of chemical reactions are used to produce a range of products and can occur at different rates (ACSSU187)	
2.2 Formulas and equations	CS: Different types of chemical reactions are used to produce a range of products and can occur at different rates (ACSSU187)	<ul style="list-style-type: none"> using word or symbol equations to represent chemical reactions modelling chemical reactions in terms of rearrangement of atoms
2.3 Classifying chemical reactions	CS: Different types of chemical reactions are used to produce a range of products and can occur at different rates (ACSSU187)	<ul style="list-style-type: none"> using word or symbol equations to represent chemical reactions

3 Investigating reactions		
3.1 Predicting a reaction	CS: Different types of chemical reactions are used to produce a range of products and can occur at different rates (ACSSU187)	<ul style="list-style-type: none"> predicting the products of different types of simple chemical reactions using word or symbol equations to represent chemical reactions
3.2 Reaction rates	CS: Different types of chemical reactions are used to produce a range of products and can occur at different rates (ACSSU187)	<ul style="list-style-type: none"> investigating the effect of a range of factors, such as temperature and catalysts, on the rate of chemical reactions
3.3 Energy and mass in reactions	CS: Different types of chemical reactions are used to produce a range of products and can occur at different rates (ACSSU187)	<ul style="list-style-type: none"> considering the role of energy in chemical reactions recognising that the conservation of mass in a chemical reaction can be demonstrated by simple chemical equations investigating a range of different reactions to classify them as exothermic or endothermic
Physical sciences		
4 Road science		
4.1 Speed and acceleration	PS: The motion of objects can be described and predicted using the laws of physics (ACSSU229)	<ul style="list-style-type: none"> recognising that a stationary object, or a moving object with constant motion, has balanced forces acting on it gathering data to analyse everyday motion produced by forces, such as distance and time, speed, force, mass and acceleration
4.2 Stopping	PS: The motion of objects can be described and predicted using the laws of physics (ACSSU229)	<ul style="list-style-type: none"> gathering data to analyse everyday motion produced by forces, such as distance and time, speed, force, mass and acceleration
4.3 Collisions	PS: The motion of objects can be described and predicted using the laws of physics (ACSSU229) PS: Energy conservation in a system can be explained by describing energy transfers and transformations (ACSSU190)	<ul style="list-style-type: none"> using Newton's Second Law to predict how a force affects the movement of an object recognising that the Law of Conservation of Energy explains that total energy is maintained in energy transfers and transformations recognising that in energy transfer and transformation, a variety of processes can occur, so that the usable energy is reduced and the system is not 100% efficient comparing energy changes in interactions such as car crashes, the motion of pendulums, lifting and dropping
5 Space engineering		
5.1 Getting into space	PS: The motion of objects can be described and predicted using the laws of physics (ACSSU229)	<ul style="list-style-type: none"> recognising and applying Newton's Third Law to describe the effects of interactions between two objects
5.2 Orbiting the Earth	PS: The motion of objects can be described and predicted using the laws of physics (ACSSU229)	<ul style="list-style-type: none"> gathering data to analyse everyday motion produced by forces, such as distance and time, speed, force, mass and acceleration
5.3 Living in space	SHE: People use scientific knowledge to evaluate whether they accept claims, explanations or predictions, and advances in science can affect people's lives, including generating new career opportunities (ACSHE194) SHE: Values and needs of contemporary society can influence the focus of scientific research (ACSHE230)	<ul style="list-style-type: none"> recognising that the study of the universe and the exploration of space involve teams of specialists from the different branches of science, engineering and technology recognising that financial backing from governments or commercial organisations is required for scientific developments and that this can determine what research is carried out
6 Using electricity		
6.1 Electrical safety	PS: Energy conservation in a system can be explained by describing energy transfers and transformations (ACSSU190)	
6.2 Measuring electricity	PS: Energy conservation in a system can be explained by describing energy transfers and transformations (ACSSU190)	
6.3 Where does electricity come from?	PS: Energy conservation in a system can be explained by describing energy transfers and transformations (ACSSU190)	

Biological sciences		
7 Inheritance		
7.1 DNA	BS: Transmission of heritable characteristics from one generation to the next involves DNA and genes (ACSSU184)	<ul style="list-style-type: none"> recognising the role of DNA as the blueprint for controlling the characteristics of organisms using models and diagrams to represent the relationship between DNA, genes and chromosomes describing mutations as changes in DNA or chromosomes and outlining the factors that contribute to causing mutations
7.2 Chromosomes	BS: Transmission of heritable characteristics from one generation to the next involves DNA and genes (ACSSU184)	<ul style="list-style-type: none"> recognising that genetic information passed on to offspring is from both parents by meiosis and fertilisation
7.3 Dominant and recessive	BS: Transmission of heritable characteristics from one generation to the next involves DNA and genes (ACSSU184)	<ul style="list-style-type: none"> representing patterns of inheritance of a simple dominant/recessive characteristic through generations of a family predicting simple ratios of offspring genotypes and phenotypes in crosses involving dominant/recessive gene pairs or in genes that are sex-linked
8 Evolution of life		
8.1 Biodiversity and variation	BS: The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence (ACSSU185)	<ul style="list-style-type: none"> describing biodiversity as a function of evolution
8.2 Natural selection	BS: The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence (ACSSU185)	<ul style="list-style-type: none"> outlining processes involved in natural selection including variation, isolation and selection investigating changes caused by natural selection in a particular population as a result of a specified selection pressure such as artificial selection in breeding for desired characteristics
8.3 Evolution	BS: The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence (ACSSU185)	<ul style="list-style-type: none"> evaluating and interpreting evidence for evolution, including the fossil record, chemical and anatomical similarities, and geographical distribution of species relating genetic characteristics to survival and reproduction rates
8.4 Biotechnology	BS: The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence (ACSSU185) SHE: Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries (ACSHE192)	<ul style="list-style-type: none"> investigating changes caused by natural selection in a particular population as a result of a specified selection pressure such as artificial selection in breeding for desired characteristics recognising that the development of fast computers has made possible the analysis of DNA sequencing, radio astronomy signals and other data
Earth and space sciences		
9 Earth systems		
9.1 The Earth's cycles	ESS: Global systems, including the carbon cycle, rely on interactions involving the atmosphere, biosphere, hydrosphere and lithosphere (ACSSU189)	<ul style="list-style-type: none"> modelling a cycle such as the water, carbon, nitrogen or phosphorus cycle within the biosphere
9.2 Effects of human activity	ESS: Global systems, including the carbon cycle, rely on interactions involving the atmosphere, biosphere, hydrosphere and lithosphere (ACSSU189)	<ul style="list-style-type: none"> investigating how human activity affects global systems
9.3 The atmosphere	ESS: Global systems, including the carbon cycle, rely on interactions involving the atmosphere, biosphere, hydrosphere and lithosphere (ACSSU189)	<ul style="list-style-type: none"> investigating how human activity affects global systems explaining the causes and effects of the greenhouse effect investigating the effects of climate change on sea levels and biodiversity

10 Origin of the universe		
10.1 The night sky	ESS: The universe contains features including galaxies, stars and solar systems, and the Big Bang theory can be used to explain the origin of the universe (ACSSU188)	<ul style="list-style-type: none"> describing how the evolution of the universe, including the formation of galaxies and stars, has continued since the Big Bang
10.2 Stars and galaxies	ESS: The universe contains features including galaxies, stars and solar systems, and the Big Bang theory can be used to explain the origin of the universe (ACSSU188)	<ul style="list-style-type: none"> describing how the evolution of the universe, including the formation of galaxies and stars, has continued since the Big Bang
10.3 Life cycle of stars	ESS: The universe contains features including galaxies, stars and solar systems, and the Big Bang theory can be used to explain the origin of the universe (ACSSU188)	<ul style="list-style-type: none"> describing how the evolution of the universe, including the formation of galaxies and stars, has continued since the Big Bang recognising that the age of the universe can be derived using knowledge of the Big Bang theory identifying the evidence supporting the Big Bang theory, such as Edwin Hubble's observations and the detection of microwave radiation
Options		
11 Carbon chemistry		
11.1 Carbon compounds	CS: Different types of chemical reactions are used to produce a range of products and can occur at different rates (ACSSU187)	<ul style="list-style-type: none"> using word or symbol equations to represent chemical reactions
11.2 Plastics and fibres	CS: Different types of chemical reactions are used to produce a range of products and can occur at different rates (ACSSU187)	<ul style="list-style-type: none"> investigating how chemistry can be used to produce a range of useful substances such as fuels, metals and pharmaceuticals using word or symbol equations to represent chemical reactions
11.3 Carbon in fuels	CS: Different types of chemical reactions are used to produce a range of products and can occur at different rates (ACSSU187)	<ul style="list-style-type: none"> investigating how chemistry can be used to produce a range of useful substances such as fuels, metals and pharmaceuticals
12 Psychology		
12.1 What is psychology?		
12.2 Memory		
12.3 Behaviour		
12.4 Research methods in psychology	SIS: Formulate questions or hypotheses that can be investigated scientifically (ACSI198)	<ul style="list-style-type: none"> formulating questions that can be investigated within the scope of the classroom or field with available resources