EP Curriculum Map
NSW (2025) Science - Stages 4 & 5

*Please note that resources to support the **Data science** and **Working scientifically** outcomes in both Stages 4 & 5 can be found throughout various topics covered on EP. Skills specific to the Working scientifically outcomes are highlighted in their own section of this document.*

Stage 4

Observing the Universe

SC4-OTU-01 explains how observations are used by scientists to increase knowledge and understanding of the Universe

EP Lessons in 1. Space science	
• Models of the Solar System • Earth, Moon and Sun • Phases of the Moon • Lunar Eclipse • Solar Eclipse • Solar Eclipses: A Celestial Dance!	• Day and Night • Seasons • Changing Seasons • Investigation: Modelling The Earth, Moon and Sun • Investigation: Seasons and the Angle of the Sun
EP Lessons in 2. Aboriginal and Torres Strait Islander Peoples' Cultural Knowledges of astronomy	
• Astronomical Observations of First Nations Australians • Indigenous Australian Constellations • Calendars and the Solar Year	• Tides • Data Interpretation: Tides and the Moon
EP Lessons in 3. Observing the Universe in context	
• How Technology has Improved Understanding of Astronomy • Exploring Space	• Exploring the Moon, Mars and Beyond • Satellites

Forces

SC4-FOR-01 describes the effects of forces in everyday contexts

EP Lessons in 1. Forces in action	
• Introduction to Forces • Contact and Non-Contact Forces • Balanced and Unbalanced Forces • Measuring Force	• Drawing Forces • Electrostatic Force • Gravity, Mass and Weight
EP Lessons in 2. Magnets in everyday life	
• Magnetism • Magnetic Fields	• Investigation: Mapping Magnetic Fields • Investigation: Building an Electromagnet
EP Lessons in 3. Simple machines in everyday life	
• Levers • Investigation: Levers • Inclined Planes • Pre Lab: A Ramp as a Simple Machine • Post Lab: A Ramp as a Simple Machine • Wheels, Axles and Pulleys	• Gears • Gear Ratio • Bicycle Investigation • Ancient Tools and Weapons • Investigation: Forces in Boomerangs
EP Lessons in 4. Forces in context	
• Maglev Trains • How Planes Stay Up • Comparing Robots	• Safety Systems • Sports Science

Cells and classification

SC4-CLS-01 describes the unique features of cells in living things and how structural features can be used to classify organisms

EP Lessons in 1. Classification of living things	
• Who is MRS GREN? Characteristics of All Living Things • Biological Classification • Classification Systems • Species and Hybrids • The Five Kingdoms • The Animal Kingdom: Vertebrates • The Animal Kingdom: Arthropods • Adaptations	• Introduction to Dichotomous Keys • Branching Keys • Tabular Keys • Plants as Medicine • Investigation: Building Dichotomous Keys • Investigation: Classifying Leaves • Investigation: Using Dichotomous Keys
EP Lessons in 2. Cells	
• Cells and the Cell Theory • Prokaryotic Cells • Eukaryotic Cells • Animal Cell Structure • Plant Cell Structure • Comparing Animal and Plant Cells • Parts and Function of a Microscope • How to Use a Microscope	• Magnification • Size of Cells • Specialised Plant Cells • Specialised Animal Cells • Hierarchy of Organisation • Investigation: Pond Critters • Investigation: Using a Microscope

Solutions and mixtures

SC4-SOL-01 explains how the properties of substances enable separation in a range of techniques

EP Lessons in 1. Properties of matter	
• Particle Model of Matter • Solids, Liquids and Gases • The Water Cycle and Weather • Temperature and States of Matter • Comparing States of Water	• Changing States • Melting and Freezing • Boiling, Evaporation and Condensation • Investigating Heating and Cooling Curves
EP Lessons in 2. Properties of water	
• Mass and Volume • Density • Investigation: Building a Density Tower	• Density and Buoyancy • When Water Freezes
EP Lessons in 3. Solutions	
• Solubility • Solvents and Solutes • Solute and Solvent	• Concentration • Investigation: Temperature and Dissolving
EP Lessons in 4. Separating mixtures	
• Introduction to Mixtures • Graphs and Tables of Mixtures • Introduction to Separation • Filtration • Pre Lab: Filtration • Post Lab: Filtration • Evaporation • Investigation: Evaporation • Distillation • Chromatography • Pre-lab: Chromatography: Separating Colours	• Post-Lab: Chromatography: Separating Colours • Crystallisation • Magnetic and Electrostatic Separation • Investigation: Separating a Mixture of Solids • First Nation Australian Separation Techniques: Extraction and Filtration • First Nation Australian Separation Techniques: Sorting methods • Indigenous Art Using Mixtures • Separation in Industries • Separation in Food • Blood as a Mixture

• Recycling Sewage	
EP Lessons in 5. Solutions and mixtures in context	
• Microplastics & COVID-19 • Water Treatment	• STEM Activity: The Zombie Apocalypse Water Shortage

Living systems

SC4-LIV-01 describes the role, structure and function of a range of living systems and their components

EP Lessons in 1. Body systems	
• Introduction to Body Systems • Organ Systems • Overview of the Digestive System • Stomach and Small Intestine • Large Intestine and Rectum • Introduction to the Circulatory System • The Heart • Investigation: Heart Dissection • Blood Vessels	• Blood • Introduction to the Respiratory System • Breathing • Introduction to Excretory System • Excretory Organs • Chronic Kidney Disease and Technology • Coronary Heart Disease • Artificial Organs
EP Lessons in 2. Plant systems	
• Xylem and Phloem • Water Uptake	• Flower Dissection
EP Lessons in 3. Ecosystems	
• Introduction to Functioning Ecosystems • Biotic and Abiotic Elements • Biotic Factors and Competition • Investigating Ecosystems • The Carbon Cycle • The Nitrogen Cycle • Ecological Energy Efficiency • Food Chains and Food Webs	• Trophic Levels • Populations • Predicting Population Changes • Predators, Prey and Competition • Predator-Prey Dynamics • Introduced and Invasive Species • Invasive Species in Australia
EP Lessons in 4. Living systems in context	
• What happened to. . .? Why Species are Endangered or Extinct • Australian Flora and Fauna Over Time	• Writing Task: Saving Australia's Wildlife

Periodic table and atomic structure

SC4-PRT-01 explains how uses of elements and compounds are influenced by scientific understanding and discoveries relating to their properties

EP Lessons in 1. Classification of matter	
• What are Atoms, Elements and Compounds? • Elements and Compounds in Household Products • Properties and Uses of Everyday Elements and Compounds • Investigating Properties of Common Elements and Compounds	• Metals, Non-Metals and Metalloids • Focus On Data: Identifying Metals, Nonmetals and Metalloids • Investigating Properties of Metals and Non-Metals
EP Lessons in 2. Atomic structure	
• Atomic Structure • History of the Atomic Model	• Investigation: Build an Atom
EP Lessons in 3. Periodic table	
• The Periodic Table • Why did we need a Periodic Table in the first place? • Discovering Elements • Trends in the Periodic Table • Understanding the Periodic Table and Atomic Structure • Elements	• First 10 Elements • Atomic Symbols, Atomic Numbers and Relative Atomic Mass • Organisation of the Periodic Table • Electron Arrangements of Atoms • Quiz- First 20 Elements (Name to Symbol) • Quiz- First 20 Elements (Symbol to Name)
EP Lessons in 4. Periodic table and atomic structure in context	
• Using Substances Based on their Properties • Uses of Metals	• Alloys and Their Uses

Change

SC4-CHG-01 explains how energy causes geological and chemical change

EP Lessons in 1. Energy transfers	
• What is Energy? • Heat Transfer • Conduction • Convection • Radiation • Lab Activity: Radiation Investigation • Investigation: Heat Energy • Kinetic Energy	• Potential Energy • Identifying KE or PE • Law of Conservation of Energy • Energy Transformations • Displaying Energy Transformations • Sankey Diagrams • Investigation: Energy Transformations
EP Lessons in 2. Chemical change	
• Physical Change • Chemical Changes • Identifying Chemical Reactions • Investigation: Observing Chemical Reactions	• Writing Word Reactions • Investigating Respiration
EP Lessons in 3. Geological change	
• Plate Tectonics • Plate Boundaries • Development of the Theory of Plate Tectonics • Wegener's Theory of Continental Drift • Seafloor Spreading & Magnetic Striping • Introduction to Earthquakes • Earthquake Hazards • Measuring Earthquakes • Introduction to Volcanoes • Volcanic Eruptions • Earthquake and Volcano Patterns	• The Rock Cycle • Sedimentary Rocks • Igneous Rocks • Metamorphic Rocks • Classifying Rocks • How First Nations Australians Used Rocks • Introduction to Minerals • Identifying Minerals • Focus on Data: Comparing Minerals • Fossils • Australian Fossils

• Earth's Structure • Mechanical Layers of the Earth	• Dissecting the Earth • Investigation: Build a Stratigraphic Column
EP Lessons in 4. Change in context	
• Rube Goldberg Machines	

Working Scientifically

Curriculum Outcomes		
SC4-WS-01 uses scientific tools and instruments for observations	• Measuring in Science • Reading the Meniscus	• Observations and Inferences: Qualitative vs Quantitative
SC4-WS-02 identifies questions and makes predictions to guide scientific investigations	• Questioning and Hypothesising	
SC4-WS-03 plans safe and valid investigations	• Scientific Method	
SC4-WS-04 follows a planned procedure to undertake safe and valid investigations	• Science Equipment • Safety Guidelines • Safety Equipment • Variables • Control Variables and Control Groups	• Fair Tests • Accuracy • Validity • Repeatability and Reliability • Sample Size
SC4-WS-05 uses a variety of ways to process and represent data	• Organising Data into a Data Table from an Experiment • Interpreting Data Tables • Graphs in Science	• Interpreting Graphs in Science • Column Graphs • Line Graphs • Matching Tables to Graphs
SC4-WS-06 uses data to identify trends, patterns and relationships, and draw conclusions	• Evaluating in Science	
SC4-WS-07 identifies problem-solving strategies and proposes solutions	• Understanding Scientific Verbs	• Answering Scientific Questions
SC4-WS-08 communicates scientific concepts and ideas using a range of communication forms	• Writing a Scientific Report • Creating an Infographic	• Building A Scientific Poster

Stage 5

Energy

SC5-EGY-01 evaluates current and alternative energy use based on ethical and sustainability considerations

EP Lessons in 1. Law of conservation of energy	
• Conservation of Energy • Sankey Diagrams • Energy Efficiency	• Calculating Energy Efficiency • Energy Transfer and Efficiency in Everyday Life
EP Lessons in 2. Sources of energy	
• Sources of Energy • Harnessing Electrial Energy	• Electricity Generation In Australia
EP Lessons in 3. Electrical energy	
• Circuit Symbols and Diagrams • Circuits in Series • Circuits in Parallel • Comparing Circuits • Class Experiment: Designing Simple Circuits	• Introduction to Ohm's Law • Calculating Using Ohm's Law • Ohm's Law • Energy Efficiency in Customary and Modern Appliances

Disease

SC5-DIS-01 explains how an understanding of the causes of disease can be used to prevent and manage the spread of disease

EP Lessons in 1. Homeostasis	
• Basics of Homeostasis • Homeostatic Terms • Maintaining the Internal Environment • Stimulus-Response Model • Negative and Positive Feedback • Modelling Human Thermoregulation	• Regulating Blood Sugar • The Endocrine System • Action of Hormones • The Nervous System • Control Systems - Nervous vs Endocrine • Investigation: Testing Reflexes
EP Lessons in 2. Infectious and non-infectious diseases	
• Introduction to Disease • Epidemics, Endemics and Pandemics • Genetic Diseases • Diseases Caused by Environmental Exposure • Nutritional Diseases • Cancer	• Patterns of Non-Infectious Diseases in Populations • Disease Transmission • Non-Specific Defence Against Disease • Specific Defence Against Disease • Vaccines • Active and Passive Immunity
EP Lessons in 3. Disease control and prevention	
• Disease Prevention • A Preventable Disease: Cholera	• Spread of Infectious Disease • Indigenous Medicine in Australia

Materials

SC5-MAT-01 assesses the uses of materials based on their physical and chemical properties

EP Lessons in 1. Resources	
• Introduction to Earth's Resources • Fossil Fuels as a Resource • Soil as a Resource • Minerals and Ores as Resources	• Mining • Nuclear Fuel as a Resource • How First Nations Australians Used Rocks • Chemical Reactions of First Nations Australians
EP Lessons in 2. Bonding	
• Introduction to Bonding • Electron Configuration of Ions • Ions and Ion Formation • Ionic Bonds and Ionic Compounds • Ionic Bonding Card Game	• Covalent Bonding • Covalent Compounds • Metallic Substances • Revision: Comparing Substances
EP Lessons in 3. Chemistry of organic compounds	
• Introduction to Organic Chemistry • Molecular and Structural Formulas of Alkanes • Naming Alkanes • Fractional Distillation • Fossil Fuels	• Biofuels • Combustion Reactions • Complete Combustion Reactions • Incomplete Combustion Reactions
EP Lessons in 4. Polymers	
• Polymers • Plastics are Polymers • Recyclable, Non-Recyclable and Biodegradable Polymers	

Environmental sustainability

SC5-ENV-01 analyses the impact of human activity on the natural world

EP Lessons in 1. Sustainability	
• Sustainability • Sustainable Cities • Australia's Sustainable Cities	• The Importance of Planning for Australia's Urban Future • Australia's Urban Future
EP Lessons in 2. Climate science	
• Climate and Weather • Focus on Data: Examining Past Climate • The Greenhouse Effect • The Enhanced Greenhouse Effect • Investigation: The Greenhouse Effect • CFCs and the Ozone Layer	• Effects: Temperature • Carbon Capture • Understanding and Minimising Climate Change • Carbon Footprints • Where Have all the Turtles Gone? • Researching Climate Change
EP Lessons in 3. Impacts of present-day climate change	
• The Human Impact: Climate Change • Climate Change and Food Security • Glaciers and Climate Change	• Effects of Climate Change on Biodiversity • Computer Modelling and the Environment • Comprehension: If Climate Change is Real, How Come...?
EP Lessons in 4. Alternative resource use and recycling	
• What is Pollution? • Pollution • Pollution and Ecosystems • Water Pollution and Solutions	• Oil Pollution and Industrial Waste • Firestick Farming and the Greenhouse Effect • First Nations' Australians' Land Management Practices • Recycling
EP Lessons in 5. Environmental sustainability in context	
• Scientific Writing: Arguing For or Against Climate Change	

Genetics and evolutionary change

SC5-GEV-01 describes the relationship between the diversity of living things and the theory of evolution
SC5-GEV-02 explains how DNA is responsible for the transmission of heritable characteristics and can be manipulated through genetic technologies

EP Lessons in 1. DNA structure and function	
• Basics of DNA • Structure of DNA • Nitrogenous Bases • Genes and Genetic Information • Genes to Proteins	• The Human Genome Project • Discovering the Double Helix • The Knotty New DNA Structure! • Investigation: Extracting DNA
EP Lessons in 2. Variation and inheritance	
• Asexual Reproduction • Sexual Reproduction • Mutations and Mutagens • Chromosomal Abnormalities • Mutations and Survival • Mendel • Genotypes and Phenotypes	• Inheriting Alleles and Punnett Squares • Dominant/Recessive Interactions • Punnett Squares • Pedigrees • Sex Linkage, Punnett Squares and Pedigrees • Investigation: Modelling Inheritance of Alleles
EP Lessons in 3. Genetic technologies	
• Using Bacteria in Biotechnology and Genetic Engineering • Genetically Modified Organisms (GMOs) • Transgenesis: Food Production	• Using Yeast • Using Enzymes • Social and Ethical Implications of Using Biotechnology
EP Lessons in 4. The theory of evolution and evidence of natural selection	
• Natural Selection • Natural selection and Antibiotic resistance • Mechanisms of Isolation • Data Interpretation: Natural Selection in Action! • Adaptations of First Nations Australians	• Geological Time • Australian Flora and Fauna Over Time • The History of Evolutionary Thought • Building an Evolutionary Timeline

Reactions

SC5-RXN-01 describes a range of reaction types
SC5-RXN-02 explains the factors that affect the rate of chemical reactions

EP Lessons in 1. Law of conservation of mass	
• Conservation of Mass • Reaction in Action: Baking Soda and Vinegar • Data Interpretation - Breaking the Law (of Conservation of Mass)?	• Investigation: Conservation of Mass • Investigation: Marshmolecules (Conservation of Mass)
EP Lessons in 2. Chemical reactions	
• Writing Chemical Formulae • Writing Word and Chemical Equations • Types of Chemical Reactions	• Neutralisation Reactions • pH and Indicators
EP Lessons in 3. Rate of chemical reactions	
• Rate of Reaction • Agitation, Concentration and Surface Area • Activation Energy, Temperature and Catalysts • Overview: Factors Affecting Reaction Rates	• Graphing Rate of Reaction • Investigation: Modelling Rate of Reaction: Concentration • Investigation: Modelling Rate of Reaction: Temperature
EP Lessons in 4. Nuclear reactions	
• What is Radioactivity? • Types of Radiation • Properties of Radiation • Writing Nuclear Equations • Half-Lives • Investigation: Skittle Half-Lives • Uses of Radioactive Isotopes	• Nuclear Power: Risk or Opportunity • Effects of Radiation on Humans • Nuclear Fission • Nuclear Fusion • The Power of the Atom: Unveiling the Atomic Bomb

Waves and motion

SC5-WAM-01 describes the features and applications of different forms of waves
SC5-WAM-02 explains the motion of objects using Newton's laws of motion

EP Lessons in 1. Common properties of waves	
• Properties of Waves • The Electromagnetic Spectrum	• Uses and Hazards • EM Waves and Communication
EP Lessons in 2. Sound waves	
• Sound Waves • Investigation: Slinky Waves • Pitch and Loudness • Investigation: Investigating Pitch (Musical Bottles) • The Ear and Hearing	• Indigenous Aboriginal Music • Sound and First Nations Australians • Ultrasound • Investigation: Speed of Sound
EP Lessons in 3. Light waves	
• The Visual System • Light as a Wave • Colour • Investigation: Colourful Candy • Introduction to the Ray Model • Reflection and Plane Mirrors • Reflection and Curved Mirrors • Investigation: Law of Reflection • Refraction • Lenses	• Investigation: Lenses • Drawing Ray Diagrams • Refractive Index • Total Internal Reflection • Investigation: Optical Fibres • Telescopes • Observing Space • Radar Ranging • Satellites • Investigation: Build a Periscope
EP Lessons in 4. Motion	
• Motion, Speed and Velocity • Acceleration • Distance-Time Graphs • Speed-Time Graphs	• Displacement, Velocity & Acceleration-Time Graphs • Focus on Data: Graphing and Analysing Motion • Using the Acceleration Formula to Calculate Final Velocity • Using the Acceleration Formula to Calculate Initial Velocity

• Using the Acceleration Formula to Calculate Time • Investigation: Ticker Timers • Newton's First Law • Investigation: Investigating Newton's First Law (Egg Drop) • Newton's Second Law • Investigation: Investigating Newton's Second Law (Truckapults)	• Newton's Third Law • Investigation: Investigating Newton's Third Law (Balloon Rocket) • Scalars and Vectors • Calculating Displacement • Extension: Displacement and Compass Directions
EP Lessons in 5. Waves and motion in context	
• 5G Mobile Technology • Electromagnetic Radiation and Medicine	• Car Safety Systems • Reducing Speed Limits

Working Scientifically

Curriculum Outcomes		
SC5-WS-01 selects and uses scientific tools and instruments for accurate observations	• Observations and Inferences; Qualitative vs Quantitative • Science Equipment • Measuring in Science	• Reading the Meniscus • Measurement Errors • Human Errors
SC5-WS-02 develops questions and hypotheses for scientific investigation	• Questioning and Hypothesising • Research Questions	• Writing a Hypothesis
SC5-WS-03 designs safe, ethical, valid and reliable investigations **SC5-WS-04** follows a planned procedure to undertake safe, ethical, valid and reliable investigations	• Safety Guidelines • Safety Equipment • How to Prepare a Risk Assessment • Introduction to Ethics • Ethics Around the World • Control Variables and Control Groups • Fair Tests	• Validity • Variables • Accuracy • Accuracy and Precision • Repeatability and Reliability • Sample Size
SC5-WS-05 selects and uses a range of tools to process and represent data	• Introduction to Types of Data • Experiment and Observation • Organising Data into a Data Table from an Experiment • Interpreting Data Tables	• Graphs in Science • Column Graphs • Line Graphs • Interpreting Graphs in Science • Matching Tables to Graphs
SC5-WS-06 analyses data from investigations to identify trends, patterns and relationships, and draws conclusions	• Evaluating in Science • Writing a Discussion	• Writing Conclusions
SC5-WS-07 selects suitable problem-solving strategies and evaluates proposed solutions to identified problems	• Understanding Scientific Verbs • Bloom's Taxonomy	• Answering Scientific Questions
SC5-WS-08 communicates scientific arguments with evidence, using scientific language and terminology in a range of communication forms	• Writing a Scientific Report • Creating an Infographic	• Building A Scientific Poster