COURSE PLANNER

AUSTRALIAN CURRICULUM: SCIENCE YEARS 7–10

OXFORD

Science Understanding

Biological sciences

Year 7		There are differences within and between groups of organisms; classification helps organise this diversity (ACSSU111)
Year 8	Cells are the basic units of living things and have specialised structures and functions (ACSSU149) Multi-cellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce (ACSSU150)	
Year 9	Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes to their environment (ACSSU175)	
Year 10		The transmission of heritable characteristics from one generation to the next involves DNA and genes (ACSSU184) The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence ACSSU185)

Chemical sciences

Year 7		Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques (ACSSU113)
Year 8	The properties of the different states of matter can be explained in terms of the motion and arrangement of particles (ACSSU151) Differences between elements, compounds and mixtures can be described at a particle level (ACSSU152)	Chemical change involves substances reacting to form new substances (ACSSU225)
Year 9	All matter is made of atoms which are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms (ACSSU177)	Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction, mass is not created or destroyed (ACSSU178) Chemical reactions, including combustion and the reactions of acids, are important in both non-living and living systems and involve energy transfer (ACSSU179)
Year 10	The atomic structure and properties of elements are used to organise them in the Periodic Table (ACSSU186)	Different types of chemical reactions are used to produce a range of products and can occur at different rates (ACSSU187)

Earth and space sciences

Year 7	Predictable phenomena, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon (ACSSU115)	Some of Earth's resources are renewable, but others are non-renewable (ACSSU116) Water is an important resource that cycles through the environment (ACSSU222)
Year 8		Sedimentary, igneous and metamorphic rocks contain minerals and are formed by processes that occur within Earth over a variety of timescales (ACSSU153)
Year 9		The theory of plate tectonics explains global patterns of geological activity and continental movement (ACSSU180)
Year 10	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)	Global systems, including the carbon cycle, rely on interactions involving the biosphere, lithosphere, hydrosphere and atmosphere (ACSSU189)

Physical sciences

Year 7		Change to an object's motion is caused by unbalanced forces acting on the object (ACSSU117) Earth's gravity pulls objects towards the centre of the Earth (ACSSU118)
Year 8	Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems (ACSSU155)	
Year 9	Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)	
Year 10	Energy conservation in a system can be explained by describing energy transfers and transformations (ACSSU190)	The motion of objects can be described and predicted using the laws of physics (ACSSU229)

Science as a Human Endeavour

Nature and development of science

Scientific knowledge changes as new evidence becomes available, and some scientific discoveries have significantly changed people's understanding of the world (ACSHE119/134)

Science knowledge can develop through collaboration and connecting ideas across the disciplines of science (ACSHE223/226)

Use and influence of science

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 (ACSHE120/135)

Science understanding influences the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management (ACSHE121/136)

People use understanding and skills from across the disciplines of science in their occupations (ACSHE224/227)

Nature and development of science

Scientific understanding, including models and theories, are contestable and are refined over time through a process of review by the scientific community (ACSHE157/191)

Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries (ACSHE158/192)

Use and influence of science

People can use scientific knowledge to evaluate whether they should accept claims, explanations or predictions (ACSHE160/194)

Advances in science and emerging sciences and technologies can significantly affect people's lives, including generating new career opportunities (ACSHE161/195)

The values and needs of contemporary society can influence the focus of scientific research (ACSHE228/230)

Science Inquiry Skills

Questioning and predicting

Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge (ACSIS124/139)

Planning and conducting

Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS125/140)

In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task (ACSIS126/141)

Processing and analysing data and information

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 (ACSIS129/144)

Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions (ACSIS130/145)

Evaluating

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 (ACSIS131/146)

Use scientific knowledge and findings from investigations to evaluate claims (ACSIS132/234)

Communicating

Communicate ideas, findings and solutions to problems using scientific language and representations using digital technologies as appropriate (ACSIS133/148)

Questioning and predicting

Formulate questions or hypotheses that can be investigated scientifically (ACSIS164/198)

Planning and conducting

Plan, select and use appropriate investigation methods, including field work and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods (ACSIS165/199)

Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data (ACSIS166/200)

Processing and analysing data and information

Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (ACSIS169/203)

Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (ACSIS170/204)

Evaluating

Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data (ACSIS171/205)

Critically analyse the validity of information in secondary sources and evaluate the approaches used to solve problems (ACSIS172/206)

Communicating

Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations (ACSIS174/208)

Key concepts (Big Ideas)

The form and features of living things are related to the functions that their body systems perform (Structure and function)	**A diverse range of living things have evolved on Earth** (Diversity and evolution)	**Living things are interdependent and interact with each other and their environment** (Interdependence)	**The chemical and physical properties of substances are determined by their structure** (Properties and structure)	**Substances change and new substances are produced by rearranging atoms through atomic interactions and energy transfer** (Interaction and change)	**Earth is part of a solar system that is part of a larger universe** (Systems in space)	**Earth is subject to change within and on its surface over a range of timescales as a result of natural processes and human use of resources** (Dynamic Earth)	**Energy can be transferred and transformed from one form to another** (Energy and its transformations)	**A range of forces affect the behaviour of objects** (Forces and motion)