



This course is developed using the WA Curriculum as a guide. The order of the content and the time in which they are covered are only a guide. Circumstances may result in changes during the year. Kambalda West District High School reserves the right to alter the order the objectives are taught and time over which they are taught.

In Year 9, students consider the operation of systems at a range of scales. They explore ways in which the human body as a system responds to its external environment and the interdependencies between biotic and abiotic components of ecosystems. They are introduced to the notion of the atom as a system of protons, electrons and neutrons, and how this system can change through nuclear decay. They learn that matter can be rearranged through chemical change and that these changes play an important role in many systems. They are introduced to the concept of the conservation of matter and begin to develop a more sophisticated view of energy transfer. They begin to apply their understanding of energy and forces to global systems such as continental movement.

Vocabulary & Grammar

Below is a list of science words and phrases that students should know: the meaning of; and be able to spell; by the end of term:

Homeostasis	Acids	Ecosystems	Volts
Nervous system	Bases	Habitat	Potential Difference
Synapse	Element	Niche	Amperes
Sympathetic	Atomic number	Adaptations	Current
Parasympathetic	Protons	Plate tectonics	Ohms
Hormones	Electrons	Mantel	Resistance
Endocrine	Neutrons	Crust	Conduction
Exocrine	Energy level	Core	Convection
Pituitary gland	Valence	Earthquakes	Radiation
Neurones	Ions	P-waves	Electromagnetic spectrum
Stimuli	Ionic	S-waves	Power
Fungi	Covalent	Volcano	Watts
Virus	Metallic	Magnetic striping	Generator
Bacteria	Alloy	Tsunami	Parallel
Pathogen	Carbonate	Plate boundaries	Series
Immune system	Combustion	Community	Translucent
Inflammation	Neutralisation	Population	Opaque
Vaccine	Periodic table		Transparent
	Conservation		Reflection
			Refraction

There is an expectation that students will make every effort to correctly use capitals, full stops, commas, semi colons, apostrophes, question marks and exclamation marks.

Topics

Science Understanding –

- Biological Science – Students analyse how biological systems function and respond to external changes and describe ecosystems with reference to interdependencies, energy transfers and flows of matter.
- Chemical Science - Students explain chemical processes and natural radioactivity in terms of atoms and energy transfers and describe examples of important chemical reactions.
- Earth and Space Science - Students explain global features and events in terms of geological processes and timescales.
- Physical Science – Students describe wave and particle models of energy transfer and apply these to explain phenomena.

Science as a Human Endeavour –

- Students describe social and technological factors that have influenced scientific developments.

Science Inquiry –

- Students design questions that can be investigated. They design methods that include the control and measurement of variables and systematic collection of data and describe how they considered ethics and safety. Students analyse trends in data, identify relationships between variables and inconsistencies in results. They analyse their methods and the quality of their data, and suggest actions to improve the quality of their evidence. Students evaluate others' methods and explanations from a scientific perspective and use appropriate language and representations when communicating their findings and ideas.



Semester 1

Week	Topics/Syllabus	Assessment	Resources
Term 1			
1	Body Co-ordination <ul style="list-style-type: none"> Recap from last year: brief overview of the levels of organisation; cells – tissues – organs – organ systems – organism Importance of maintaining a consistent internal state: homeostasis and metabolism 		All resources are located on Share drive Pearson new spec (pgs 269 - 274)
2	<ul style="list-style-type: none"> Cardiovascular system. With the focus of how it maintains homeostasis. i.e. control temperature – vaso-constriction and vaso-dilation of the skin, transport of oxygen and waste removal. Include Excretory system (kidney function) 		Pearson new spec (pgs) Pearson old spec (pgs)
3	<ul style="list-style-type: none"> Nervous system. Voluntary vs involuntary (reflexes etc), parasympathetic vs sympathetic (Flight and fight response), Central vs peripheral. Include action potential as extension tasks 		Pearson new spec (pgs) Pearson old spec (pgs)
4	<ul style="list-style-type: none"> Endocrine system. Hormones and their respective endocrine glands; insulin, testosterone, oestrogen, adrenaline, noradrenaline, The hypothalamus and pituitary gland. Hormones vs nerve impulse; what's similar and what's different 		Pearson new spec (pgs) Pearson old spec (pgs)
5	Revise body co-ordination for Multiple choice test.	Task 1. Body co-ordination Multiple Choice	Pearson new spec (pgs) Pearson old spec (pgs)
6	Diseases <ul style="list-style-type: none"> Introduction to pathogens and the difference between micro-organisms and pathogens Three main types of pathogens; Bacteria, fungi and Viruses. What are the differences and how do they make us sick? Include examples of each; cholera, HIV, athletes foot, influenza etc.		All resources are located on Share drive Pearson new spec (pgs) Pearson old spec (pgs)
7	<ul style="list-style-type: none"> Body's defence system. Non-specific and specific immune reactions. White blood cells; macrophages (explain phagocytosis) neutrophils, B cells and T cells. Primary immune response vs secondary immune response and the role vaccines play in eradicating diseases 		Pearson new spec (pgs) Pearson old spec (pgs)
8	<ul style="list-style-type: none"> Revise Diseases for Extended response Students are allowed a page of A4 handwritten notes front and back. 	Task 2. Disease Extended response	Pearson new spec (pgs) Pearson old spec (pgs)
9	Revise both Body co-ordination and Diseases for Topic test	Task 3. Diseases and Body coordination Topic Test	Pearson new spec (pgs) Pearson old spec (pgs)
10	Science inquiry. <ul style="list-style-type: none"> Blowing Bubbles Creating a human body map 		Prac planning doc located on share drive in "Other" folder

Term 2			
1	Ecology <ul style="list-style-type: none"> Abiotic factors: recap the levels of organisation within an ecosystem (build on from year 7). What are abiotic factors and how do they differ for plants and animals. 		Pearson new spec (pgs) Pearson old spec (pgs)
2	<ul style="list-style-type: none"> Biotic factors: what are they and how do they cause populations to change? How do abiotic and biotic factors affect how an animal/plant looks/lives (adaptations)? 		Pearson new spec (pgs) Pearson old spec (pgs)
3	<ul style="list-style-type: none"> Food chains and food webs: role of each organism plays within their ecosystem (niche) and the feeding relationship between it and others. What is biodiversity and why is it important to protect it 		Pearson new spec (pgs) Pearson old spec (pgs)
4	<ul style="list-style-type: none"> Human impacts on the environment: deforestation, invasive species, climate change etc. How do each of these and more affect the natural world around us. 		Pearson new spec (pgs) Pearson old spec (pgs)
5	<ul style="list-style-type: none"> Revise for Multiple choice test Plate tectonics <ul style="list-style-type: none"> Continental drift: what is it and what is the evidence for it. Magnetic striping on the ocean floor, the idea of a super continent, structure of the earth and the convection currents that exist in the mantle. 	Task 4. Ecology Multiple Choice	Pearson new spec (pgs) Pearson old spec (pgs)
6	<ul style="list-style-type: none"> Plate movement: Explore the different types of plate boundaries and what occurs at each one. 		Pearson new spec (pgs) Pearson old spec (pgs)
7	<ul style="list-style-type: none"> Natural disasters: Earthquakes, volcanoes and tsunamis and all caused by tectonic activity. Revise for Short answer 	Task 5. Plate tectonics short answer test	Pearson new spec (pgs) Pearson old spec (pgs)
8	Revise for topic test	Task 6. Ecology + Plate tectonics Topic test	Pearson new spec (pgs) Pearson old spec (pgs)
9-10	Science inquiry <ul style="list-style-type: none"> Using a potometer Paper plate tectonics Creating a volcano. 		Prac planning doc located on share drive in "Other" folder
END OF SEMESTER 1			

Semester 2

Week	Topics/Syllabus	Assessment	Resources
Term 3			
1	Heat, Sound and light <ul style="list-style-type: none"> • Heat: the three methods of heat transference and the advantages and limitation of each • Conduction – occurs only in solids, some solids are better than others. Particle module. • Convection – only in liquid and gases, requires particles to move. Particle model. • Radiation – travels as a wave, infrared radiation, warm bodies and thermal imaging 		Pearson new spec (pgs) Pearson old spec (pgs) Conduction apparatus. Convection box.
2	<ul style="list-style-type: none"> • Sound: two types of waves; Longitudinal and transverse. • Looking at wave diagrams, identify the difference between loud and quiet waves, • Deep and high pitch waves. • How do we hear sound? – structure of the outer, middle and inner ear. • What affect does motion have on sounds (Doppler effect)? 		Pearson new spec (pgs) Pearson old spec (pgs)
3	<ul style="list-style-type: none"> • Light: What are the properties of light? How do we see light? • Light travels and exists as a spectrum; the Electromagnetic spectrum. • What happens when light hits the surface of an object (law of reflection) • What happens when light travels through a different medium (law of refraction). • Lenses and mirrors affect the movement of light. 		Pearson new spec (pgs) Pearson old spec (pgs) Light boxes and mirrors.
4	Revise for Multiple choice test	Task 7. Heat, sound and light Multiple choice	Pearson new spec (pgs) Pearson old spec (pgs)
5	Electricity <ul style="list-style-type: none"> • Measuring electricity: Current, Potential difference and resistance. $V = I \times R$. • There are various components used in everyday circuits such as lamps and switches and diodes. • Drawing circuits using correct symbols and correct organisation of components. 		Pearson new spec (pgs) Pearson old spec (pgs)
6	<ul style="list-style-type: none"> • Simple circuits: Various components obey and disobey Ohm's Law. Current exists as two forms Alternating current and direct current. • Parallel vs series circuits – how the rules for resistance, current and PD differ depending on the type of circuit you have. 		Pearson new spec (pgs) Pearson old spec (pgs)
7	<ul style="list-style-type: none"> • Energy transfer and power calculations using $P = V \times I$ • Generating electricity: electromagnetics, transformers, the right hand grip rule and how a magnetic field affects a coil of wire (Flemings left hand rule) 		Pearson new spec (pgs) Pearson old spec (pgs)
8	Revise for Short answer Test	Task 8. Electricity Short answer Test	Pearson new spec (pgs) Pearson old spec (pgs)
9	Revise for topic test	Task 9. Physics Topic Test	Pearson new spec (pgs) Pearson old spec (pgs)
10	Science Inquiry <ul style="list-style-type: none"> • Making an electromagnet • Making a motor using a battery, a magnet, paperclips and a coil of copper wire. • Building an energy efficient house 		Prac planning doc located on share drive in "Other" folder

Term 4			
1	Materials <ul style="list-style-type: none"> Atoms elements and compounds: properties of different elements, atomic numbers, atomic shape how they form ions and isotopes. Using the periodic table atomic number, atomic mass, number of valence electrons and number of energy shells 		Pearson new spec (pgs) Pearson old spec (pgs)
2	<ul style="list-style-type: none"> Radioactive isotopes and radioactive decay – alpha, beta and gamma radiation. Half-life, measuring and determining half-life and decaying particles. 		Pearson new spec (pgs) Pearson old spec (pgs)
3	<ul style="list-style-type: none"> Interaction between atoms results in bonding the theory of eight. Valence electrons equals the group number. Ionic bonding – giving of electrons to form positive and negative ions. Cations and Anions. The common materials formed from ionic bonding i.e. salts. Writing ionic components names and chemical formulae (balancing charge) Covalent Bonding – sharing of electrons between non-metals. Drawing Dot and cross diagrams to show the sharing of electrons. The difference between single, double and triple covalent bonds Metallic bonding – metals only. Delocalised sea of electrons. Malleable and ductile. Alloys. The allotropes of carbon. Diamond, graphite graphene and Bucky balls 	Task 10: Materials Multiple Choice Test	Pearson new spec (pgs) Pearson old spec (pgs)
4	Acids and bases. <ul style="list-style-type: none"> pH values and indicators Acids vs metals – M.A.S.H. Hydrogen pop test. Acids vs Bases – Neutralisation reactions Acids vs carbonates – detecting carbon dioxide 		Pearson new spec (pgs) Pearson old spec (pgs)
5	Reaction types <ul style="list-style-type: none"> Chemical reactions – indicators that a chemical reaction has taken place – how can you tell? Combustion reactions – what are they and why are they useful? Word equation hydrocarbon + oxygen = water + carbon dioxide Conservation of mass – balancing equations and why it's important. Anaerobic vs aerobic respiration – respiration with and without oxygen, which is the most efficient and why? 		Pearson new spec (pgs) Pearson old spec (pgs)
6	Revise for test	Task 11. Chemistry Topic Test	Pearson new spec (pgs) Pearson old spec (pgs)
7-10	Science inquiry <ul style="list-style-type: none"> Titration Using anaerobic respiration – yeast vs animal. Growing salt crystals 		Prac planning doc located on share drive in "Other" folder
END OF SEMESTER 2			



A number of assessments will be used throughout the term to identify the students understanding in the course and be used to determine a grade. Student achievement will be reported using the following descriptors.

Semester 1

Assessment Type	Task Description	KWDHS Weighting	Due Date
Multiple Choice	Task 1: Body co-ordination Multiple Choice	7.5%	<i>Term 1, Week 5</i>
Extended Answer Test	Task 2: Disease Extended response	7.5%	<i>Term 1, Week 8</i>
Topic Test	Task 3: Diseases and Body coordination Topic Test	10%	<i>Term 1, Week 9</i>
Multiple Choice	Task 4: Ecology Multiple Choice	7.5%	<i>Term 2, Week 5</i>
Short Answer Test	Task 5: Plate tectonics short answer test	7.5%	<i>Term 2, Week 7</i>
Topic Test	Task 6: Ecology + Plate tectonics Topic test	10%	<i>Term 2, Week 8</i>

Semester 2

Assessment Type	Task Description	KWDHS Weighting	Due Date
Multiple Choice	Task 7: Heat, sound and light Multiple choice	7.5%	<i>Term 3, Week 5</i>
Short Answer Test	Task 8: Electricity Short answer Test	7.5%	<i>Term 3, Week 8</i>
Topic Test	Task 9: Physics Topic Test	10%	<i>Term 3, Week 9</i>
Multiple Choice	Task 10: Materials Multiple Choice Test	10%	<i>Term 4, Week 4</i>
Topic Test	Task 11: Chemistry Topic Test	15%	<i>Term 4, Week 6</i>

It is expected that all assessments will be completed to the best of your ability and be submitted by the deadlines set. Please make yourself aware of the Assessment Policy as failure to meet deadlines has severe consequences.

Grade	Description	The student demonstrates achievement that:
A	Excellent	has greatly exceeded the expected standard. Achievement is well beyond what is expected at this year level.
B	Good	exceeds the expected standard.
C	Satisfactory	at the expected standard.
D	Limited	is below the expected standard.
E	Very Low	is below the minimum acceptable for this year level.

Student Signature: _____

Parent/Guardian Signature: _____