

YEAR 9 SCIENCE: Biological Science_2020

Year 9 Australian Curriculum Achievement Standard:

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Science Understanding:

By the end of Year 9, students explain chemical processes and natural radioactivity in terms of atoms and energy transfers and describe examples of important chemical reactions. They describe models of energy transfer and apply these to explain phenomena. They explain global features and events in terms of geological processes and timescales. **They analyse how biological systems function; respond to external changes with reference to interdependencies, energy transfers, and flows of matter.**

Science as a Human Endeavour:

They describe social and technological factors that have influenced scientific developments and predict how future applications of science and may affect people's lives.

Science Inquiry Skills:

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

Unit Specific Information

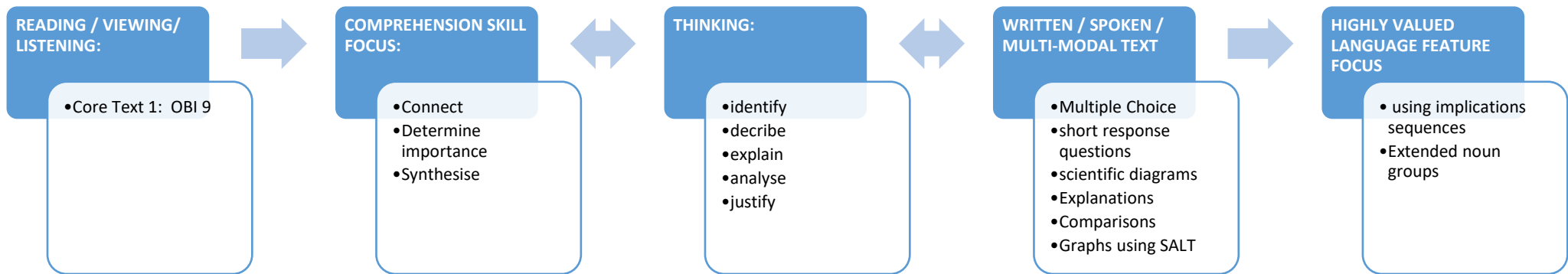
Students will review the necessary elements for life learned from year 7 and year 8. This will form the foundation on which they explain and analyse how the requirements of human life (oxygen, water, waste removal, and disease prevention) are provided by the coordination of body systems (circulatory, respiratory, nervous, endocrine, exocrine, urinary, immune, integumentary and muscular systems). Students will explain how, over time, the development of human anatomy observation and imaging technologies have improved humans' understanding of the functions and interactions of body systems. Students will investigate the response of the body to changes because of the presence of micro-organisms through processing and analysing data. Students will communicate using scientific vocabulary, explanations, labelled diagrams and flow charts.

Assessment Details: Summative Item 1

Mode	Short response exam (IA4 type)
Duration	5 min perusal, 60 minutes working
Conditions	Individual Exam Conditions
Dates	Term 1, Week 6

Assessment Details: Summative Item 2

Mode	Short and Long response exam (IA1 type)
Duration	5 min perusal, 60 minutes working
Conditions	Individual Exam Conditions
Dates	Term 1, Week 9



PRIORITY STANDARDS		
	Thinking Routines : Comprehension and Cognitive	Communication
3		
2	<p>Comprehension:</p> <ul style="list-style-type: none"> • Connect to what you already know • Determine importance in texts • Synthesise and draw conclusions <p>Cognitive:</p> <ul style="list-style-type: none"> • Describe • Explain • Analyse 	<p>Communication:</p> <ul style="list-style-type: none"> • Factorial Explanations using implication sequences • Comparisons with extended noun groups

Learning Goals:

Strands and Sub-Strands	Australian Curriculum Content Descriptors	Kirwan High Learning Goals
<p>Science Understanding: Biological Sciences</p>	<p>Content Descriptor Multicellular organisms rely on coordinated and interdependent internal systems to respond to changes to their environment (ACSSU175)</p> <p>Achievement Standard elaboration analysis of how biological systems function and respond to external changes with reference to interdependencies, energy transfers and flows of matter</p> <p><i>Elaborations:</i></p> <ul style="list-style-type: none"> • <i>describing how the requirements for life (for example oxygen, nutrients, water and removal of waste) are provided through the coordinated function of body systems such as the respiratory, circulatory, immune, digestive, nervous and excretory systems [only those requirements and systems in bold covered in depth]</i> • <i>explaining how body systems work together to maintain a functioning body using models, flow diagrams or simulations</i> • <i>identifying responses using nervous and endocrine systems</i> 	<p>RETRIEVAL LEARNING</p> <ul style="list-style-type: none"> ✓ Review from year 7, the characteristics of a living organism: moves, reproduces, nutrients, grows, responds to stimuli, exchanges gases, produces waste, and requires water. ✓ Review from year 7, the necessary elements for life: oxygen, nutrients, water and the removal of waste for life and their role in supporting life. ✓ Review from year 8, multicellular organisms contain systems of organs made from cells and tissues that carry out specialised functions that enable them to survive. ✓ <u>Recognise</u> the function of the following organ systems as: <ul style="list-style-type: none"> • Respiratory system is responsible for gas exchange • Circulatory system is responsible for moving particles around the body • Digestive system is responsible for extracting nutrients and water from food for the body to grow and function • Nervous system is responsible for sensing, processing and sending electrochemical signals for the body • Excretory system is responsible for removing wastes and regulating water concentration in the body • Integumentary system is responsible for protecting against external factors and sensing external stimuli • Muscle system is responsible for moving the body in response to stimuli • Immune system is responsible for defending the body against pathogens and prevent disease <p>COMPREHENSION LEARNING</p> <ul style="list-style-type: none"> ✓ <u>Describe</u> how the requirements for life (the intake of oxygen and the removal of carbon dioxide waste) are provided through the coordinated function of body systems (respiratory, circulatory, nervous and muscle systems), using diagrams. ✓ <u>Explain</u>, using a factorial explanation that includes chemical word equations and graphic organisers, that cells use oxygen for cellular respiration that produces the chemical energy store ATP and the waste product carbon dioxide, which is facilitated by the coordinated function of the body systems (respiratory, circulatory, nervous and muscle systems). ✓ <u>Explain</u> how the body systems (circulatory, integumentary, nervous, and muscular) work together to maintain a functioning body temperature by responding to temperature changes in the environment, using a sequential explanation and graphic organisers.

		<p>ANALYSIS LEARNING (REQUIRED FOR ACHIEVEMENT STANDARD)</p> <ol style="list-style-type: none"> 1. <u>Analyse</u>, by comparing the structure and function of the lung and the heart, to explain the relationship between the circulatory system and the respiratory system that is essential for human life and survival. 2. <u>Analyse</u>, by describing the important structures in related organ systems, to explain interdependent functions of heat transfers between the body and the environment and the resulting heat regulation of the body for survival. <p>ANALYSIS LEARNING (A/B EXTENSION)</p> <ol style="list-style-type: none"> 3. <u>Analyse</u>, by comparing patterns found in ventilation and patterns found in cellular respiration, to explain their interdependence that allow flows of oxygen and carbon dioxide [make links to metabolism] 4. <u>Analyse</u>, by comparing the human body's responses, to changes in the carbon dioxide levels in the blood with reference to interdependencies, energy transfers and flows of matter [make links to exercise] 5. <u>Analyse</u> how the human body's internal systems respond to changes to blood cell structure, such as sickle cell anaemia, with reference to interdependencies, energy transfers and flows of matter. 6. <u>Analyse</u>, by comparing the human body's responses to changes in the external temperature, with reference to interdependencies, energy transfers and flows of matter. <p>KNOWLEDGE UTILISATION LEARNING (A/B EXTENSION)</p> <ul style="list-style-type: none"> ✓ <u>Decide</u> the best alternative using given data and information. ✓ <u>Predict</u> an outcome based on given data and information. ✓ <u>Justify</u> decisions and predictions using data and information in a factorial explanation.
<p>Science Inquiry Skills: Processing and analysing data and information</p>	<p>Content Descriptor Analyse patterns and trends in data , including describing relationships between variables and identifying inconsistencies (AC SIS169)</p> <p>Achievement Standard Elaboration</p>	<p>RETRIVAL LEARNING – review year 7-8 inconsistency work</p> <ul style="list-style-type: none"> ✓ <u>Identify</u> data points from tables, graphs and diagrams about the human body's response to energy transfers and flows of matter <p>COMPREHENSION LEARNING</p> <ul style="list-style-type: none"> ✓ <u>Represent</u> data in tables, graphs or diagrams about the human body's response to energy transfers and flows of matter

	<p>analysis of trends in data to: identify relationships between variables; reveal inconsistencies in results <i>Note that describe is a B standard elaboration</i></p> <p>Content Descriptor Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (AC SIS170)</p> <p>Achievement Standard Elaboration <i>Note that there is no C standard elaboration for this descriptor</i> B standard elaboration is: <u>draw conclusions consistent with evidence</u></p>	<p>ANALYSIS LEARNING</p> <ul style="list-style-type: none"> ✓ <u>Analyse</u>, by identifying data trends and patterns in tables, graphs and diagrams, to identify the relationships between internal/external conditions and the human body's responses ✓ <u>Analyse</u> the quality of the data in tables, graphs and diagrams to identify inconsistencies in the data. <p>KNOWLEDGE UTILISATION LEARNING</p> <ul style="list-style-type: none"> ✓ <u>Decide</u> the best alternative using given data and information. ✓ <u>Predict</u> an outcome based on given data and information. ✓ <u>Propose</u> a conclusion based on given data and information. ✓ <u>Justify</u> decisions, predictions and conclusions using data and information in a factorial explanation
<p>Science Inquiry skills: Communicating</p>	<p>Content Descriptor Communicate scientific ideas and information for a particular purpose, including constructing evidence based arguments and using appropriate , conventions and representations (AC SIS174)</p> <p>Achievement Standard Elaboration use appropriate language and representations when communicating their findings and ideas to specific audiences.</p>	<ul style="list-style-type: none"> ✓ <u>Use</u> appropriate scientific vocabulary to communicate ideas to a scientific audience ✓ <u>Represent</u> data and information about biological systems and their control with labelled explanations (factorial and sequential), diagrams, charts, tables and graphs ✓ <u>Represent</u> data in graphs using SALT principles

Possible Habit of Mind:

<p>Exploring Meaning of the HOM By the end of this unit students will be able to:</p>	<p>Expanding Capacity for using the HOM By the end of this unit students will be able to:</p>	<p>Increasing Alertness for the HOM By the end of this unit students will be able to:</p>	<p>Extending Values of the HOM By the end of this unit students will be able to:</p>	<p>Building Commitment towards the HOM By the end of this unit students will be able to:</p>
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General Capabilities: This unit provides opportunities for students to engage in following capabilities:

<p>Literacy</p> <ul style="list-style-type: none"> ✓ Comprehending texts through listening, reading and viewing ✓ Composing texts through speaking, writing and creating ✓ Text knowledge ✓ Grammar knowledge ✓ Word knowledge ✓ Visual knowledge <p>Numeracy</p> <ul style="list-style-type: none"> □ Estimating and calculating with whole numbers ✓ Recognising and using patterns and relationships □ Using fractions, decimals, percentages, ratios and rates 	<p>ICT</p> <ul style="list-style-type: none"> □ Applying social and ethical protocols and practices when using ICT □ Investigating with ICT □ Creating with ICT □ Communicating with ICT □ Managing and operating ICT <p>Critical and creative thinking</p> <ul style="list-style-type: none"> ✓ Inquiring - identifying, exploring and organising information and ideas ✓ Generating ideas, possibilities and actions ✓ Reflecting on thinking and processes ✓ Analysing, synthesising and evaluating reasoning and procedures 	<p>Personal and social capability</p> <ul style="list-style-type: none"> ✓ Self-awareness ✓ Self-management ✓ Social awareness ✓ Social management <p>Ethical understanding</p> <ul style="list-style-type: none"> □ Understanding ethical concepts and issues □ Reasoning in decision making and actions □ Exploring values, rights and responsibilities <p>Intercultural understanding</p> <ul style="list-style-type: none"> □ Recognising culture and developing respect
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<input type="checkbox"/> Using spatial reasoning <input checked="" type="checkbox"/> Interpreting statistical information <input type="checkbox"/> Using measurement		<input type="checkbox"/> Interacting and empathising with others <input type="checkbox"/> Reflecting on intercultural experiences and taking responsibility
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Cross Curriculum Priorities:

<input type="checkbox"/> Aboriginal and Torres Strait Islander histories and cultures	<input type="checkbox"/> Asia and Australia’s engagement with Asia	<input type="checkbox"/> Sustainability
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Differentiation [for small groups or individuals]:

Tiered homework sheets; Using diagnostic and formative to inform practice; checklists

Learning Sequences:

Week	Day 1	Day 2	Day 3
1	Scheduled Orientation Lesson	<ol style="list-style-type: none"> 1. Establish Routines – including KSHS entry and exit procedure, seating plans, attention signal 2. Establish Science Expectations – Phone Policy, Equipment, Bookwork and Homework 3. Establish Classroom identity. Suggestions include class contract, class mascot, class artefact ect. 4. Students develop personal effort and behaviour goals for term 1 – these should be revisited throughout the term 	<p>Year 9 Science Overview Cohort wide lesson</p> <ul style="list-style-type: none"> • Diagnostic testing – where are your students? • Engage students in the concept of science • Overview of Year 9 topics and timeline • Develop interest in term 1 topic • Students develop personal unit learning goals (KWL) –this should be revisited throughout the unit
		<p>Resources: Lesson 1 folder on share point:</p> <ul style="list-style-type: none"> • Power point • Effort and Behaviour goals organiser 	<p>Resources: Diagnostic 1 test Lesson 2 folder on share point</p> <ul style="list-style-type: none"> • Power Point • Activities worksheets
2	<p>Learning sequence 1: <u>Living organisms</u> Accessing prior knowledge Identifying misconceptions Learning to Learn concept introduction</p> <p>(RETRIEVAL LEARNING)</p> <ul style="list-style-type: none"> ✓ Review from year 7, the <i>characteristics of a living organism: moves, reproduces, nutrients, grows, responds to stimuli, exchanges gases, produces waste, and requires water.</i> ✓ Review from year 7, the <i>necessary elements for life: oxygen, nutrients, water and the removal of waste for life</i> and their role in supporting life. 	<p>Learning sequence 2: <u>Human Body Organ Systems</u> Accessing prior knowledge Identifying misconceptions Interacting with new knowledge</p> <p>(RETRIEVAL LEARNING)</p> <ul style="list-style-type: none"> ✓ Review from year 8, <i>multicellular organisms contain systems of organs made from cells and tissues that carry out specialised functions that enable them to survive.</i> ✓ <u>Recognise</u> the function of the following organ systems as: <ul style="list-style-type: none"> • Respiratory system is responsible for gas exchange 	<p>Learning sequence 3: <u>Coordinated Body Systems for oxygen delivery and carbon dioxide waste removal</u></p> <p>Accessing prior knowledge Identifying misconceptions Interacting with new knowledge</p> <p>(COMPREHENSION LEARNING)</p> <ul style="list-style-type: none"> ✓ <u>Describe</u> how the requirements for life (the intake of oxygen and the removal of carbon dioxide waste) are provided through the coordinated function of body systems (respiratory, circulatory, nervous and muscle systems), using diagrams.

		<ul style="list-style-type: none"> • Circulatory system is responsible for moving particles around the body • Digestive system is responsible for extracting nutrients and water from food for the body to grow and function • Nervous system is responsible for sensing, processing and sending electrochemical signals for the body • Excretory system is responsible for removing metabolic wastes and regulating water concentrations in the body • Integumentary system is responsible for protecting against external factors and sensing external stimuli • Muscle system is responsible for moving the body in response to stimuli • Immune system is responsible for defending the body against pathogens and prevent disease 	
	Vocabulary Nutrients, oxygen, waste, stimuli	Vocabulary multicellular; organism; cell; tissue; organ, Respiratory System, Circulatory System, Muscular System, Digestive System, Nervous System, Integumentary System, Excretory System, Immune System, pathogens, disease, electrochemical, metabolic waste, stimuli	Vocabulary Oxygen, carbon dioxide, coordination, respiratory, circulatory, nervous and muscle systems, ventilation, inspiration, expiration, diaphragm, bronchi, alveolus/I, artery, vein, red blood cell, haemoglobin, heart, diffusion, autonomic nervous system
	Pedagogy Strategies: Learning to Learn <ul style="list-style-type: none"> • Facilitate heterogeneous groups with well-defined group roles. • Use think pair share strategy 	Pedagogy Strategies: Learning to Learn <ul style="list-style-type: none"> • Facilitate heterogeneous groups with well-defined group roles. • Use think pair share strategy 	Pedagogy Strategies: Learning through Reading: Students use multimodal texts to create labelled diagrams
	Resources OBI Yr 7 text Education Perfect Learning to Learn power point – share point Lesson 3 folder on share point	Resources Lesson 4 folder on share point	Resources Lesson 5 folder on share point
3 School Photos WED – Swimming Carnival	Learning sequence 3: <u>Coordinated Body Systems for oxygen delivery and carbon dioxide waste removal</u> Interacting with new knowledge (RETRIVAL LEARNING)	Learning sequence 3: <u>Coordinated Body Systems for oxygen delivery and carbon dioxide waste removal</u> Practicing and Deepening – differentiate based on diagnostic test results (COMPREHENSION LEARNING) ✓ <u>Describe</u> how the requirements for life (the intake of oxygen and the removal of carbon dioxide	Learning sequence 3: <u>Coordinated Body Systems for oxygen delivery and carbon dioxide waste removal</u> Practicing and Deepening (COMPREHENSION LEARNING) ✓ <u>Represent</u> data in tables, graphs or diagrams about the human body’s response to energy transfers and flows of matter

	<p>✓ <u>Identify</u> data points from tables, graphs and diagrams about the human body's response to energy transfers and flows of matter</p> <p>(COMPREHENSION LEARNING)</p> <p>✓ <u>Represent</u> data in tables, graphs or diagrams about the human body's response to energy transfers and flows of matter</p> <p>✓ <u>Describe</u> how the requirements for life (the intake of oxygen and the removal of carbon dioxide waste) are provided through the coordinated function of body systems (respiratory, circulatory, nervous and muscle systems), using diagrams.</p>	<p>waste) are provided through the coordinated function of body systems (respiratory, circulatory, nervous and muscle systems), using diagrams.</p> <p>✓ <u>Explain</u>, using a factorial explanation that includes chemical word equations and graphic organisers, that cells use oxygen for cellular respiration that produces the chemical energy store ATP and the waste product carbon dioxide, which is facilitated by the coordinated function of the body systems (respiratory, circulatory, nervous and muscle systems).</p>	<p>(ANALYSIS LEARNING Required)</p> <p>7. <u>Analyse</u>, by comparing the structure and function of the lung and the heart, to <u>explain</u> the relationship between the circulatory system and the respiratory system that is essential for human life and survival.</p> <p>(ANALYSIS LEARNING A/B EXTENSION)</p> <p>8. <u>Analyse</u>, by comparing patterns found in ventilation and patterns found in cellular respiration, to explain their interdependence that allow flows of oxygen and carbon dioxide [make links to metabolism]</p> <p>9. <u>Analyse</u>, by comparing the human body's responses, to changes in the carbon dioxide levels in the blood with reference to interdependencies, energy transfers and flows of matter [make links to exercise]</p>
	<p>Vocabulary Oxygen, carbon dioxide, coordination, respiratory, circulatory, nervous and muscle systems, cellular respiration, chemical energy, ATP, respiration, ventilation, inspiration, expiration, diaphragm, bronchi, alveolus/l, artery, vein, red blood cell, haemoglobin, heart, diffusion, autonomic nervous system, hypothalamus, respiratory centre, chemoreceptors,</p>	<p>Vocabulary Oxygen, carbon dioxide, coordination, respiratory, circulatory, nervous and muscle systems, cellular respiration, chemical energy, ATP, respiration, ventilation, inspiration, expiration, diaphragm, bronchi, alveolus/l, artery, vein, red blood cell, haemoglobin, heart, diffusion, autonomic nervous system, hypothalamus, respiratory centre, chemoreceptors,</p>	<p>Vocabulary Oxygen, carbon dioxide, coordination, respiratory, circulatory, nervous and muscle systems, cellular respiration, chemical energy, ATP, respiration, ventilation, inspiration, expiration, diaphragm, bronchi, alveolus/l, artery, vein, red blood cell, haemoglobin, heart, diffusion, autonomic nervous system, hypothalamus, respiratory centre, chemoreceptors,</p>
	<p>Pedagogy Strategies Learning through Cognitive Verbs: Describe Learning to Learn Lesson</p> <ul style="list-style-type: none"> Using Diagrams to describe phenomena 	<p>Pedagogy Strategies Learning through Cognitive Verbs: Explain Learning by writing</p> <ul style="list-style-type: none"> Writing Factorial Explanation – Exemplar provided Practice writing explanation 	<p>Pedagogy Strategies Learning through Cognitive Verbs: Analyse, Compare Learning by writing</p> <ul style="list-style-type: none"> Writing comparative texts-Exemplar provided Practice writing explanations and comparisons
	<p>Resources</p>	<p>Resources</p>	<p>Resources</p>
<p>4 High Resolves</p>	<p>CATCH UP LESSON</p>	<p>Learning Sequence 4: <u>Coordinate Body Systems for thermoregulation</u></p> <p>Accessing prior knowledge Identifying misconceptions Interacting with new knowledge</p> <p>(RETRIVAL LEARNING)</p> <p>✓ <u>Identify</u> data points from tables, graphs and diagrams about the human body's response to energy transfers and flows of matter</p>	<p>Learning Sequence 4: <u>Coordinate Body Systems for thermoregulation</u></p> <p>Practicing and Deepening</p> <p>(RETRIVAL LEARNING)</p> <p>✓ <u>Identify</u> data points from tables, graphs and diagrams about the human body's response to energy transfers and flows of matter</p> <p>(COMPREHENSION LEARNING)</p>

		<p>(COMPREHENSION LEARNING)</p> <ul style="list-style-type: none"> ✓ <u>Explain</u> how the body systems (circulatory, integumentary, nervous, and muscular) work together to maintain a functioning body temperature by responding to temperature changes in the environment, using a sequential explanation and graphic organisers 	<ul style="list-style-type: none"> ✓ <u>Explain</u> how the body systems (circulatory, integumentary, nervous, and muscular) work together to maintain a functioning body temperature by responding to temperature changes in the environment, using a sequential explanation and graphic organisers <p>(ANALYSIS LEARNING)</p> <p>10. <u>Analyse</u>, by describe the important structures in related organ systems, to explain interdependent functions of heat transfers between the body and the environment and the resulting heat regulation of the body for survival.</p>
		<p>Vocabulary Integumentary system, dermis, epidermis, Stimuli, receptor, sensory nerve, hypothalamus, motor nerve, muscle, response, exocrine gland, evaporative cooling, stimulus response, thermos-regulation, feedback, effector, central nervous system, spinal cord, brain, peripheral nervous system</p>	<p>Vocabulary Integumentary system, dermis, epidermis, Stimuli, receptor, sensory nerve, hypothalamus, motor nerve, muscle, response, exocrine gland, evaporative cooling, stimulus response, thermos-regulation, feedback, effector, central nervous system, spinal cord, brain, peripheral nervous system</p>
		<p>Pedagogy Learning to Learn + Learning through content: Double Entry Diary – Review → you do</p>	<p>Pedagogy Learning to Learn</p>
	Resources	Resources	Resources
5 WED- Global Leaders Launch	<p>FORMATIVE ASSESSMENT</p> <p>Learning Sequence 4: <u>Coordinate Body Systems for thermoregulation</u></p> <p>Practicing and Deepening</p> <p>(RETRIVAL LEARNING)</p> <ul style="list-style-type: none"> ✓ <u>Identify</u> data points from tables, graphs and diagrams about the human body's response to energy transfers and flows of matter <p>(COMPREHENSION LEARNING)</p> <ul style="list-style-type: none"> ✓ <u>Explain</u> how the body systems (circulatory, integumentary, nervous, and muscular) work together to maintain a functioning body temperature by responding to temperature changes in the environment, using a sequential explanation and graphic organisers 	<p>Learning Sequence 5: <u>Revise retrieval, comprehension and analysis learning from learning sequences 1-4</u></p> <p>Practicing and Deepening – Differentiate based on formative assessment</p> <p>RETRIVAL, COMPREHENSION AND REQUIRED ANALYSIS REVIEW IF NEEDED</p> <p>(ANALYSIS LEARNING A/B EXTENSION)</p> <p>12. <u>Analyse</u> how the human body's internal systems respond to changes to blood cell structure, such as sickle cell anaemia, with reference to interdependencies, energy transfers and flows of matter.</p> <p>13. <u>Analyse</u>, by comparing the human body's responses to changes in the external temperature,</p>	<p>Learning Sequence 5: <u>Revise retrieval, comprehension and analysis learning from learning sequences 1-4</u></p> <p>Practicing and Deepening – Differentiate based on formative assessment</p> <p>(ANALYSIS LEARNING A/B EXTENSION)</p> <p>14. <u>Analyse</u> how the human body's internal systems respond to changes to blood cell structure, such as sickle cell anaemia, with reference to interdependencies, energy transfers and flows of matter.</p> <p>15. <u>Analyse</u>, by comparing the human body's responses to changes in the external temperature, with reference to interdependencies, energy transfers and flows of matter.</p>

	<p>(ANALYSIS LEARNING)</p> <p>11. <u>Analyse</u>, by identifying the important structures in related organ systems, to explain interdependent functions of heat transfers between the body and the environment and the resulting heat regulation of the body for survival.</p>	<p>with reference to interdependencies, energy transfers and flows of matter.</p> <ul style="list-style-type: none"> ✓ (KNOWLEDGE UTILISATION LEARNING A/B EXTENSION) <u>Decide</u> the best alternative using given data and information. ✓ <u>Predict</u> an outcome based on given data and information. ✓ <u>Justify</u> decisions and predictions using data and information in a factorial explanation. 	<p>(KNOWLEDGE UTILISATION LEARNING A/B EXTENSION)</p> <ul style="list-style-type: none"> ✓ <u>Decide</u> the best alternative using given data and information ✓ <u>Predict</u> an outcome based on given data and information. ✓ <u>Justify</u> decisions and predictions using data and information in a factorial explanation.
	<p>Vocabulary Integumentary system, dermis, epidermis, Stimuli, receptor, sensory nerve, hypothalamus, motor nerve, muscle, response, exocrine gland, evaporative cooling, stimulus response, thermos-regulation, feedback, effector, central nervous system, spinal cord, brain, peripheral nervous system</p>	<p>Vocabulary</p>	<p>Vocabulary</p>
	<p>Pedagogy Learning to Learn Learning by Doing Facilitate heterogeneous groups with well-defined group roles.</p>	<p>Pedagogy Learning through Cognitive Verbs: Justify Learning to Learn</p>	<p>Pedagogy</p>
	<p>Resources</p>	<p>Resources</p>	<p>Resources</p>
6	<p>Multiple Choice/Short Response Exam – IA4 type</p>	<p>Learning Sequence 6: <u>Graphing data to identify variables and relationships between variables from tables, graphs and diagrams</u></p> <p>Application Lesson</p> <p>(RETRIVAL LEARNING)</p> <ul style="list-style-type: none"> ✓ <u>Identify</u> data points from tables, graphs and diagrams about the human body's response to energy transfers and flows of matter 	<p>Learning Sequence 6: <u>Graphing data to identify variables and relationships between variables from tables, graphs and diagrams</u></p> <p>Application Lesson</p> <p>(RETRIVAL LEARNING)</p> <ul style="list-style-type: none"> ✓ <u>Identify</u> data points from tables, graphs and diagrams about the human body's response to energy transfers and flows of matter <p>(COMPREHENSION LEARNING)</p>

			<ul style="list-style-type: none"> ✓ <u>Represent</u> data in tables, graphs or diagrams about the human body's response to energy transfers and flows of matter ✓ <u>Represent</u> data in graphs using SALT principles
	Vocabulary		Vocabulary SALT, bar/column graph, scatter plot, line of best fit, flow chart, independent variable, x axis, dependent variable , y axis
	Pedagogy	Pedagogy Learning to Learning Learning through Data I do – We do – You do	Pedagogy Learning through Data I do – We do – You do
	Resources Exemplar of labelled diagram	Resources	Resources
7 Monitoring	<p>Learning Sequence 7: <u>Analysing data to identify relationships between variables from tables, graphs and diagrams</u></p> <p>Application Lesson</p> <p>(ANALYSIS LEARNING)</p> <ul style="list-style-type: none"> ✓ <u>Analyse</u>, by identifying data trends and patterns in tables, graphs and diagrams, to identify the relationships between internal/external conditions and the human body's responses <p>KNOWLEDGE UTILISATION LEARNING (A/B EXTENSION)</p> <ul style="list-style-type: none"> ✓ <u>Decide</u> the best alternative using given data and information. ✓ <u>Predict</u> an outcome based on given data and information. 	<p>Learning Sequence 7: <u>Analysing data to identify relationships between variables from tables, graphs and diagrams</u></p> <p>Application Lesson</p> <p>(ANALYSIS LEARNING)</p> <ul style="list-style-type: none"> ✓ <u>Analyse</u>, by identifying data trends and patterns in tables, graphs and diagrams, to identify the relationships between internal/external conditions and the human body's responses <p>KNOWLEDGE UTILISATION LEARNING (A/B EXTENSION)</p> <ul style="list-style-type: none"> ✓ <u>Decide</u> the best alternative using given data and information. ✓ <u>Predict</u> an outcome based on given data and information. 	<p>Learning Sequence 7: <u>Analysing data to identify relationships between variables from tables, graphs and diagrams</u></p> <p>Application Lesson</p> <p>(ANALYSIS LEARNING)</p> <ul style="list-style-type: none"> ✓ <u>Analyse</u>, by identifying data trends and patterns in tables, graphs and diagrams, to identify the relationships between internal/external conditions and the human body's responses <p>KNOWLEDGE UTILISATION LEARNING (A/B EXTENSION)</p> <ul style="list-style-type: none"> ✓ <u>Decide</u> the best alternative using given data and information. ✓ <u>Predict</u> an outcome based on given data and information.
	Vocabulary SALT, bar/column graph, scatter plot, line of best fit, flow chart, independent variable, x axis, dependent variable , y axis	Vocabulary	Vocabulary
	Pedagogy Learning through Data Review → you do Learning by Writing I do – We do – You do Exemplar provided	Pedagogy Learning to Learn Learning through Data Learning by Doing Facilitate <u>homogeneous</u> groups with well-defined group roles.	Pedagogy Learning to Learn Learning through Data Learning by Doing Facilitate <u>homogeneous</u> groups with well-defined group roles.
	Resources	Resources	Resources
	Learning Sequence 8: <u>Analysing the quality of data</u>	Learning Sequence 8: <u>Analysing the quality of data</u>	Formative Assessment

8	Formative Exam Learning Sequence 8: <u>Analysing the quality of data</u>	Learning Sequence 8: <u>Analysing the quality of data</u>	Revision
	Application lesson ✓ <u>Analyse</u> the quality of the data in tables, graphs and diagrams to identify inconsistencies in the data.	Application lesson ✓ <u>Analyse</u> the quality of the data in tables, graphs and diagrams to identify inconsistencies in the data.	
	Vocabulary	Vocabulary	Vocabulary
	Pedagogy Learning through Data I do – We do – You do	Pedagogy Learning through Data	Pedagogy Learning to Learn Learning through Writing exemplar provided
	Resources	Resources	Resources
9 Exam Block Week	Revision	Short and Extended Response – IA1 type exam	Make up Exams
10 Monitoring			

To do:

Proficiency Scales

Know and Do table for students

Required texts

Diagnostic Test – should include explanations and data

Reading Comprehension strategy focus

Analysis strategy focus

Homework booklet

Bookwork strategy focus

Cognitive Verbs

Cognitive Verb term	QCAA Jnr syllabus definitions	QCAA Snr syllabus definitions
Analyse	Consider in detail for the purpose of finding meaning or relationships, and identifying patterns, similarities and differences; in order to explain and interpret it	<p><i>Examine</i> or consider in detail for the purpose of finding meaning or relationships, and identifying patterns, similarities and differences; in order to explain and interpret it</p> <p><i>Dissect</i> to ascertain and examine constituent parts and/or their relationships; break down or examine in order to identify the essential elements, features, components or structure; determine the logic and reasonableness of information</p>
Construct	None listed	<i>Create</i> or put together by arranging ideas or items; display information in diagrammatic or logical form; make or build
Describe	Give an account of characteristics or features	<i>Give an account</i> (written or spoken) of a situation, event, pattern or process, or of the characteristics or features of something.
Explain	Provide additional information that demonstrates understanding of reasoning and/or application	<i>Make an idea or situation plain or clear</i> by describing it in more detail or revealing relevant facts; give an account; provide additional information
Evaluate	<p>Examine and judge the merit or significance of something</p> <p>Consider the quality of available evidence and the merit or significance of a claim, proposition or conclusion with reference to that evidence – including: evaluating conclusions; identifying sources of uncertainty and possible alternative explanations; describing ways to improve the quality of data; critically analysing the validity of information in primary and secondary sources; evaluating approaches used to solve problems.</p>	<i>Make an appraisal of</i> by weighing up or assessing strengths, implications and limitations; make judgments about ideas, works, solutions or methods in relation to selected criteria; examine and determine the merit, value or significance of something, based on criteria
Predict	None listed	<i>Give an expected result of an upcoming action or event; suggest what may happen based on available information</i>
Use	None listed	Operate or put into effect; apply knowledge or rules to put theory into practice