

2020 Post – Covid: National Revised ATP: Grade 10 – Term 1: LIFE SCIENCES, STARTING WITH ENVIRONMENTAL STUDIES

TERM 1 (48 days)		Week 1 15 - 17 Jan (3 days)	Week 2 20 - 24 Jan (5 days)	Week 3 27 – 31 Jan (5 days)	Week 4 3 - 7 Feb (5 days)	Week 5 10 - 14 Feb (5 days)	Week 6 17 - 21 Feb (5 days)	Week 7 24 - 28 Feb (5 days)	Week 8 2 - 6 March (5 days)	Week 9 9 - 13 March (5 days)	Week 10 16 – 18 March (5 days)	
CAPS Topics		(CAPS pg. 22) Orientation to Life Sciences	(CAPS pg. 33) Biosphere to ecosystems							(CAPS pg. 35) Biodiversity and classification		Consolidation and revision
Topics /Concepts, Skills and Values		How science works and scientific skills, careers and subject combinations	Biosphere and biomes	Environment, ecosystems	Abiotic and biotic factors	Energy flow through ecosystems	Water, oxygen, carbon and nitrogen cycles	Ecotourism and consolidation	Classification schemes including grouping of living organisms			
Requisite pre-knowledge		Scientific skills link to Grade 9	Revise ecosystems from Grade 9							Revise biosphere to ecosystems		
Resources (other than textbook) to enhance learning		Power Point slides and videos. Watch Telematics video on the scientific method at https://bit.ly/2nJnBel	Identification guides and keys, access to an ecosystem, fieldwork, internet, magazines, newspaper articles							Photographs, micrographs, identification keys and guides		
Assessment	Informal assessment; remediation	Revision questions on scientific skills	Case studies, tests, revision questions, fieldwork							Classification, practice questions and activities		
	SBA (Formal)	TASK 1: PRACTICAL TASK (minimum 30 marks) - Weighting: 20%					TASK 2: FORMAL TEST (minimum 50 marks) - Weighting: 20%					

2020 Post – Covid: National Revised ATP: Grade 10 – Term 2: LIFE SCIENCES, STARTING WITH ENVIRONMENTAL STUDIES

TERM 2 (15 teaching days)	Week 1 Starts 20 July (5 days)	Week 2 27 – 31 July (5 days)	Week 3 3 – 7 Aug (5 days)
CAPS Topics	(CAPS pg. 35) Biodiversity and classification (CAPS pg. 36) History of Life on Earth	(CAPS pg. 23) The Chemistry of Life	
Topics /Concepts, Skills and Values	<p>Classification schemes a way of organizing biodiversity</p> <ul style="list-style-type: none"> Brief history of classification: scientist attempt to classify organisms based on shared features. As information increases classification changes. One of the currently accepted classification systems is the Five-kingdom system; Animalia, Plantae, Fungi, Protista and Monera (Bacteria) -naming things in science: species concept and binomial system. Linnaeus (Carl von Linne) and his role in classification systems: Why do we use Latin? -differences between prokaryotes and eukaryotes Main groupings of living organisms are bacteria, protists, fungi, plants and animals. <p>Life's History</p> <ul style="list-style-type: none"> The three eras: Paleozoic, Mesozoic and Coenozoic. Geological timescale Cambrian explosion Mass extinctions Fossil formation and methods of dating <p>2nd Cut Diagnostic features of each of the following: -Bacteria -Protists -Fungi -Plants -Animals</p> <p>Different representations of the history of life on earth. The relationship to changes in climate and geological events ; bivalves and ammonites on the Makhatini flats in northern KZN, whale fossils in the Sahara, trilobites in the Karoo.</p> <p>Cut: Key events in life's history for which there is evidence from southern Africa Fossil tourism</p>	<p>Molecules for life: Organic molecules made up of C, H, O and N, P. Cells are made up of proteins, carbohydrates, lipids, nucleic acids and vitamins. (only basic structural detail required) Inorganic compounds</p> <ul style="list-style-type: none"> Water : 2 H and 1 O Minerals: e.g. Na, K, Ca, P, Fe, I, nitrates, phosphates. Macro and micro elements. Main functions and deficiency diseases <p>Cut: Need for fertilisers in over-utilised soils Eutrophication</p>	<p>Organic compounds</p> <ul style="list-style-type: none"> Carbohydrates – monosaccharide's (single sugars) e.g. glucose, fructose; disaccharides (double sugars) e.g. sucrose, maltose; polysaccharides (many sugars) e.g. starch, cellulose, glycogen Lipids (fats and oils) – 1glycerol and 3 fatty acids: unsaturated and saturated fats. Cholesterol in foods. Heart disease Protein – amino-acids (C, H, O and N and some have P, S, Fe). Proteins are sensitive to temperature and pH; loss of structure and function. Role of enzymes in breaking down/synthesizing molecules Influence of temperature and pH on enzyme action Lock and key model of how enzymes work Enzymes in everyday life, e.g. washing powders. Mention of Nucleic acids: DNA and RNA – Consisting of C, H, O, N and P (No details of structure required). Vitamins e.g. A, one of B vitamins, C,D and E
Requisite pre-knowledge	Revise biosphere to ecosystems	Revise the topic ' molecules' from Natural Sciences Grades 8 and 9	

Assessment	Resources (other than textbook) to enhance learning	Photographs, micrographs, identification keys and guides Museum, fossil sites, Internet and photographs. Watch the Telematics video on the history of life at https://bit.ly/33sEn00	Models: construct models of simple and more complex molecules using beads	Analyse nutritional content on food packaging
	Informal assessment; remediation	Classification, practice questions and activities Construct a timeline showing history of life, research missing link between dinosaurs and birds, hypotheses of extinctions	Revision questions on inorganic and organic compounds, practical work, draw diagrams to represent molecules. Practical work: food tests etc. – refer to pg.24 of CAPS Compare the Recommended Daily Allowance (RDA) with usual diet of individual learners. Draw a pie chart of the food types and discuss implications of the usual diet of learners.	
	SBA (Formal)	TASK 3: FORMAL TEST (minimum 50 marks) – Weighting: 20%		

2020 Post – Covid: National Revised ATP: Grade 10 – Term 3: LIFE SCIENCES, STARTING WITH ENVIRONMENTAL STUDIES

TERM 3 (31 teaching days)	Week 1 12 – 14 Aug (3 days)	Week 2 17 - 21 Aug (5 days)	Week 3 24 – 28 Aug (5 days)	Week 4 31 Aug – 4 Sept (5 days)	Week 5 7 – 11 Sept (5 days)	Week 6 14 – 18 Sept (5 days)	Week 7 21 – 23 Sept (3 days)
CAPS Topics	(CAPS pg. 25) Cells: The basic unit of life			(CAPS pg. 26) Cell division: mitosis	(CAPS pg. 28) Animal tissues	(CAPS pg. 26) Plant tissues, (CAPS pg. 28) Organs	
Topics /Concepts, Skills and Values	<p>Cell structure</p> <ul style="list-style-type: none"> Molecular make-up: Cells are mostly made of proteins, carbohydrates, lipids, nucleic acids and water <p>Cell structure and function: roles of organelles</p> <ul style="list-style-type: none"> Cell wall – support structure in plant cells only. Cell membrane – fluid mosaic model, boundaries and transport: movement across membranes: diffusion, osmosis and active transport. Nucleus, chromatin material, nuclear membrane, nucleopores, nucleolus: the control centre, heredity. Cytoplasm-storage, circulation of materials 	<p>Cell structure and function: roles of organelles</p> <ul style="list-style-type: none"> Mitochondria – release of energy during cell respiration Ribosomes – protein synthesis Endoplasmic reticulum (rough and smooth) transport systems <p>Golgi –body – assemble secretion</p>	<p>Cell structure and function: roles of organelles</p> <ul style="list-style-type: none"> Plastids – production and storage of food, pigments Vacuole, lysosomes, vesicles – storage, digestion, osmoregulation <p>Relate structure and location of organelles to their functions. Cells differ in size, shape and structure in order to carry out specialized functions Differences between plant and animal cells</p>	<p>Cell division – mitosis Cell cycles including mitosis: interphase, mitosis (with names of phases) cytokinesis, growth. Continuous process of mitosis: division of cell to form two identical cells</p> <ul style="list-style-type: none"> Difference in telophase between plant and animal cells Chromosomes: in nuclei of all cells, two chromatids, centromere <p>Role of mitosis: growth and repair. Reproduction in some simple organisms</p> <p>Cut: Cancer (Only brief description required)</p>	<p>Introduce concept of a tissue as a group of similar cells adapted for a particular function: cell differentiation</p> <p>Animal tissues</p> <ul style="list-style-type: none"> -epithelial -connective -muscle and -nerve tissue and some examples of each. <p>Relationship between structure and function [no detail required – some tissue, e.g. blood and nerves in the reflex-arc, will be covered in more detail in relevant sections]</p> <p>Cut: Application of IKS and Biotechnology Medical biotechnology, cloning, stem cell research</p>	<p>Plant tissues Emphasis on the relationship between basic structure and function Plant tissues: xylem. Phloem, parenchyma, collenchymas, sclerenchyma, epidermis and meristematic tissue</p> <p>Anatomy of dicotyledonous plants -root and stem: distribution of different tissues -structure of cells in different tissues</p> <p>Cut: Secondary growth</p>	

Requisite pre-knowledge	Grade 10: Revise organic and inorganic compounds – cells are mostly made up of proteins, carbohydrates, lipids, nucleic acids and water	Revise cell structure from Grade 9 and 10	Revise cells Grade 10	Revise cells Grade 10 Revise plant tissues, organelles, movement across membranes	
Resources (other than textbook) to enhance learning	Light microscopes, micrographs, microscopic slides, bio viewers and bio strips	Light microscopes, micrographs, microscopic slides, bio viewers and bio strips	Light microscopes, micrographs, microscopic slides, bio viewers and bio strips, wall charts	Light microscopes, micrographs, microscopic slides, bio viewers and bio strips, wall charts	
Assessment	Informal assessment; remediation	Practical work – examine cell division	Practical work – draw cells that make up animal tissues	Practical work – draw cells that make up plant tissues Draw section of stem and root, labels and functions, tests, revision questions	
	SBA (Formal)	TASK 4: PRACTICAL TASK (minimum 30 marks) - Weighting: 20%		TASK 5: FORMAL TEST (minimum 50 marks) – Weighting: 20%	

2020 Post – Covid: National Revised ATP: Grade 10 – Term 4: LIFE SCIENCES, STARTING WITH ENVIRONMENTAL STUDIES

TERM 4 (40 teaching days)	Week 1 5 Oct – 9 Oct (5 days)	Week 2 12 – 16 Oct (5 days)	Week 3 19 – 23 Oct (5 days)	Week 4 26 – 30 Oct (5 days)	Week 5 2 – 6 Nov (5 days)	Week 6 9 – 13 Nov (5 days)	Week 7 16 – 20 Nov (5 days)	Week 8 23 – 27 Nov (5 days)	Week 9 – 11 30 Nov (15 days)
CAPS Topics	(CAPS pg. 29) Support and transport systems in plants	(CAPS pg. 29) Support and transport systems in plants	(CAPS pg. 29) Support and transport systems in plants	(CAPS pg. 30) Support system in animals	(CAPS pg. 32) Transport systems in mammals				



Topics /Concepts, Skills and Values	<p>Organs: Leaf structure Cross section of a dicotyledonous leaf to demonstrate and explain its structure in terms of its functions i.e. Photosynthesis, gas exchange and transport. Link with plant tissues, appropriate cell organelles, movement across membranes and movement of molecules into through and out of the leaf.</p>	<p>Transpiration Relationship between water loss and leaf structure Factors that affect the rate of transpiration:</p> <ul style="list-style-type: none"> • temperature • light intensity • wind • humidity <p>Cut: Wilting and guttation</p>	<ul style="list-style-type: none"> • Uptake of water and minerals into xylem in roots in xylem • Transport of water and minerals to leaves • Translocation of manufactured food from leaves to other parts of plant 	<p>Human skeleton</p> <ul style="list-style-type: none"> • the axial skeleton: mention of facial bones, cranium, foramen magnum, palate and jaws. • appendicular skeleton <p>Functions of skeleton</p> <ul style="list-style-type: none"> • movement • protection • support • storage of minerals • hearing <p>Cut: Voluntary skeletal muscles – structure, diseases 2nd Cut: Skeletons: Examples of animals with each of the following :</p> <ul style="list-style-type: none"> • hydrostatic skeleton • endoskeleton • exoskeleton <p>Advantages and disadvantages Emphasize developmental progression and relate to the need for support linked to a terrestrial lifestyle Structure of a long bone Relationship between structure and function of the following tissues: mention of</p> <ul style="list-style-type: none"> • bone • cartilage • tendons • ligaments <p>Joints</p> <ul style="list-style-type: none"> • fixed • partly movable • freely movable (synovial). Structure of synovial joints: ball and socket, hinge, pivot and gliding 	<p>Transport system Blood circulation system: pulmonary and systematic (double, closed) circulatory systems</p> <ul style="list-style-type: none"> • heart and associated blood vessels • heart: internal and external structure related to functioning • cardiac cycle: flow of blood through the heart 	<p>Direction of blood flow: difference between oxygenated and deoxygenated blood in different parts of the system (diagram or schematic drawing) -lungs and pulmonary system; associated blood vessel -major organs and systematic system: Associated major blood vessels of brain, small intestine, liver kidney</p> <ul style="list-style-type: none"> • Blood vessels: structure and functioning of arteries, veins with valves and capillaries <p>Cut: Mechanisms for controlling cardiac cycle and heart rate (pulse)</p> <p>Lymph and diseases of heart and circulatory system</p>	Revision	Preparations for exams	<p style="text-align: center;">TASK 6: FINAL EXAMINATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #ADD8E6; padding: 5px;"> <p style="text-align: center;">PAPER 1 Marks: 150 Time: 2½ hours <i>Learners must answer all 3 questions.</i></p> <p>Topics and marks: <i>Chemistry of Life – 33</i> <i>Cells: Basic units of life- 19</i> <i>Cell division (mitosis) – 19</i> <i>Plant and Animal Tissues – 28</i> <i>Plant organs – 9</i> <i>Support and transport systems: plants- 23</i> <i>Support systems: animals - 19</i></p> </td> <td style="background-color: #D9F0D9; padding: 5px;"> <p style="text-align: center;">PAPER 2 Marks: 150 Time: 2½ hours <i>Learners must answer all 3 questions.</i></p> <p>Topics and marks: <i>Transport systems in mammals – 32</i> <i>Biosphere to ecosystems – 54</i> <i>Biodiversity and classification – 21</i> <i>History of life on earth - 43</i></p> </td> </tr> </table>	<p style="text-align: center;">PAPER 1 Marks: 150 Time: 2½ hours <i>Learners must answer all 3 questions.</i></p> <p>Topics and marks: <i>Chemistry of Life – 33</i> <i>Cells: Basic units of life- 19</i> <i>Cell division (mitosis) – 19</i> <i>Plant and Animal Tissues – 28</i> <i>Plant organs – 9</i> <i>Support and transport systems: plants- 23</i> <i>Support systems: animals - 19</i></p>	<p style="text-align: center;">PAPER 2 Marks: 150 Time: 2½ hours <i>Learners must answer all 3 questions.</i></p> <p>Topics and marks: <i>Transport systems in mammals – 32</i> <i>Biosphere to ecosystems – 54</i> <i>Biodiversity and classification – 21</i> <i>History of life on earth - 43</i></p>
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				<p>Roles of the following in human locomotion</p> <ul style="list-style-type: none"> • bones • joints • ligaments • tendons <p>antagonistic muscles (e.g. biceps/triceps)</p>					
Requisite pre-knowledge	Revise plant tissues	Revise diffusion and osmosis, plant tissues	Revise diffusion and osmosis, plant tissues	Revise musculoskeletal system from Grade 8, animal tissues from Grade 10	Revise circulatory system from Grade 9, revise animal tissues from Grade 10				
Resources (other than textbook) to enhance learning	Light microscopes, micrographs, microscopic slides, bio viewers and bio strips, wall charts	Light microscopes, micrographs, microscopic slides, bio viewers and bio strips, wall charts, potometer	Light microscopes, micrographs, microscopic slides, bio viewers and bio strips, wall charts, potometer	Model or photographs of human skeleton	Model of human heart, fresh heart from butchery, wall charts, stopwatch, microscope				
Assessment		Draw section of leaf, labels and functions, tests, revision questions	Practical work – investigate the factors that affect rate of transpiration, water uptake by the plants	Practical work – investigate the factors that affect rate of transpiration, water uptake by the plants	Practical work – identification of different bones on a model	Practical work: dissection of mammal heart, measuring of pulse rate, blood vessels drawings and labels and functions			
	SBA (Formal)	<p>Preparation for Final Examination</p> <p>Cognitive levels: Knowing Science – 40%; Understanding Science-25%; Applying scientific knowledge-20%; Evaluating, analysing and synthesising – 15%</p> <p>Degrees of difficulty for examination and test questions: Easy- 30%; Moderate - 40%; Difficult -25%; Very difficult – 5%</p>							