

LIFE SCIENCES GRADE 11 - WORK SCHEDULE: 2017

School: _____

Teacher: _____

Total number of Grade 11 learners: _____

TOPICS	Week	Date completed	INFORMAL ASSESSMENT			FORMAL ASSESSMENT
			Homework/ Classwork NO.	Experiments/ Investigations	Informal Tests	Annual Assessment Plan
TERM 1						
Basic structure & general characteristics of: viruses , bacteria,	Week 1 11 – 13 Jan		1, 2	Growing cultures on agar plates, or bread mould (fungus) on bread. INV 1		Practical 1.1 Micro-organisms 09/02/2017
Basic structure & general characteristics of: Protista and fungi. Roles that these groups play in maintaining balance in the environment and web of life, Symbiotic relationships of bacteria e.g. <i>N₂ fixing & E. coli</i>	Week 2 16-20 Jan		3, 4,5,6			
Effect and management of one disease from each group: - viruses (rabies, HIV/AIDS, influenza) - bacteria (blight, cholera, tuberculosis, anthrax) - protists (malaria) - fungi (rusts, thrush, ringworm, athlete's foot).	Week 3 23 -27 Jan		7,8 ,9,	Look for evidence of bacterial/fungal diseases on plants. Map the distribution of one disease in the study area INV 2 (all micro- org included)		
Immunity, use of drugs, useful micro-organisms and traditional technology	Week 4 30Jan- 03 Feb		10,11			
Grouping of Bryophytes, Pteridophytes, Gymnosperms and Angiosperms according to: - vascular tissue (xylem and phloem) - true leaves and roots - seeds or spores - fruit. Decreasing dependence on water for reproduction from Bryophytes to Angiosperm	Week 5, 6 06-17 Feb		12, 13, 14, 15	Observe and draw macroscopic parts - bryophytes: moss plant - pteridophytes: rhizome, frond with sori - gymnosperms: needles, cones and seeds; and - angiosperms: flower, fruit and seeds. INV 3 (Bryo + Pter), INV 4 (Gym + Angio)		
Asexual and sexual reproductive reproduction Flowers as reproductive structures Significance of seeds	Week 7 2—24 Feb		16, 17	Draw a phylogenetic tree showing the evolutionary history of the four plant groups and major structural changes in their history of development INV 5		

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				Dissect an example of each of the following types of flowers: - wind pollinated - insect pollinated - bird pollinated. INV 6 Record observations in a comparative table. Optional: Germinate seeds: record process		
Relationship between body plan and grouping of Six animal Phyla : Porifera, Cnidaria, Platyhelminthes, Annelida, Arthropoda and Chordata	Week 8,9 27 Feb – 10 March		18	Calculate approximate surface area to volume ratios of selected examples of different animals of the six phyla. Observe examples from as many phyla as possible (photographs/ DVDs). INV 7 Select one phylum and design a poster to show diversity in that phylum in South Africa. INV 8 Construct a comparative table of these four key features in the six selected phyla		
Key features in respect of body plans: - symmetry and cephalisation; - the number of tissue layers developed from embryo; - the number of openings in the gut; - coelom and blood systems.			19,20			
The relationship between body plans and modes of living for each of the six phyla; similarities and differences.			21, 22			
The role of invertebrates in agriculture and ecosystems (e.g., pollination, decomposition, soil aeration etc.)	Week 10 13-17 March		23			
Revision	Week 11,12					Formal test 2.1 23/03/2017 (Week 1-10)
TERM 2						
Photosynthesis – process, importance, effects of variable amounts of light, carbon dioxide and temperature on the rate of photosynthesis	Week 13 18-21 April		24, 25	Investigate photosynthesis by showing that starch is produced & light is necessary <i>The following investigations can be done (by learners) as experiments or as Demonstrations:</i> - carbon dioxide & chlorophyll is necessary for photosynthesis INV 9		
Improving crop yields : carbon dioxide enrichment, optimum light and optimum temperature and role of ATP	Week 14, 15		26 – 27			

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Practical work on Photosynthesis	24 April- 05 May			- oxygen is produced during photosynthesis; INV 10 or - data can be provided and interpreted INV 11		
Dentition of herbivores, carnivores and omnivore in terms of nutritional requirements and energy relationships	Week 16 08-12 May		28			
Human nutrition: The macro-structure of the alimentary canal and associated organs and the functions of the different parts. Mechanical or physical digestion, Chemical digestion & the role of enzymes, Absorption and Assimilation Homeostatic control: Hormonal control of blood sugar levels	Week 17 15 – 19 May		29,30,31	Obtain intestines of a sheep from a butcher and trace the passage that food will take. Cut open the stomach, portion of the small intestine and a portion of the large intestine to compare the structure of the wall in each INV 12		Practical task 1.2 Human nutrition 23/05 Formal test 2.2 25/05 (week 13-17)
Homeostatic control: Hormonal control of blood sugar level. Relationships between food intake, energy, growth and health. Balanced diet, malnutrition and analysis of information; Tooth decay, effect of alcohol and drug abuse	Week 18 22 – 26 May		32, 33	Calculate the nutritional value of a meal/diet. Use dietary information or food packaging. INV 13		
Cellular respiration: Aerobic and Anaerobic respiration Practical work on Respiration	Week 19, 20 29 May – 09 June		34,35,36	Design an investigation or demonstration to show that: - oxygen is used by living organisms during respiration. INV 14 - carbon dioxide is produced by living organisms during respiration INV 15 or - provide relevant data that can be		

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				interpreted by learners. Identify variables, suggest controls for variables and record observations INV 16		
REVISION & EXAM	21-23					
TERM 3						
Gas exchange: Distinguish between cellular respiration, breathing and gas exchange Requirements of efficient gas exchange organs in the dicotyledonous plant, earthworm, insect, bony fish & mammal and how it is met	Week 24 24- 28 July		37,38	Use books end on end and one on top of another to illustrate and calculate the differences in respect of surface area to volume ratio which is caused by different shapes: e.g., flatworm (Planaria) and earthworm. INV 17		
Human gaseous exchange: structure (macro and tissue level), location, adaptations and functioning of the ventilation system: - trachea – epiglottis – bronchi – bronchioles – lungs – ribs – intercostal muscles – diaphragm – alveoli. Ventilation of the lungs: - gaseous exchange in alveoli; - the transport of gases around the body; - gaseous exchange in tissues; and - composition of inspired air vs. expired air- analyse data.	Week 25 31 July- 4 Aug		39,40,41 42,43,44	Observe and investigate the structure of the lungs, diaphragm, associated pulmonary blood vessels and the heart of a pig or a sheep obtained from a butcher. INV 18 Construct a model of the human breathing system. Explain the limitations of the model. Demonstrate that expired air contains carbon dioxide. INV 19 Measure and compare the depth of breathing of two or more learners and the effect of exercise on breathing/pulse rate. Interpret data on depth and rate of breathing. INV 20		Project 01/08 To 08th /08 Photosynthesis/ respiration
Homeostatic control of breathing Diseases and abnormalities: causes, symptoms and treatment of TB Brief study of other respiratory diseases: - asthma – hay fever- bronchitis – emphysema – lung cancer. The effects of smoking, artificial respiration and the effects of altitude on gaseous exchange	Week 26 07 – 11 Aug		45,46, 47,48	Analyse and interpret data showing the effects of altitude on the number of red blood cells and the consequent effect on athletes at different altitudes INV 21		

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Practical work on gaseous exchange						
Excretion – role of the lungs; kidneys and bladder; liver; alimentary canal (gut); and the skin.	Week 27 14 -18 Aug		49, 50			
Urinary system structure, function and adaptations Homeostatic control Diseases affecting kidney function and Practical work	Week 28- 29 21 Aug – 01 Sep		51,52 53, 54	Dissection of a sheep's/pig's kidney. Use a worksheet to identify capsule, cortex, medulla, pyramids, blood vessels, pelvis, ureter and hilum. Draw and label the dissected kidney INV 22		Practical 1.3 30/08 Excretion
Population Ecology						
Population size: Immigration, emigration, mortality, births. fluctuations, Limiting factors and carrying capacity. Logistic and geometric growth curves with phases	Week 30 04 - 08 Sept		55,56,57 58,59	Determine the size of a population by quadrant or simple sampling e.g. simulated mark/recapture. - Collect and record data, - Interpret data Calculate/estimate the population s size. INV 23 Case study: Rationale for culling, e.g. elephants in the Kruger National Park as an example of an application of estimating population size (link to researched reasons for culling). Draw up a public survey form to test the public opinion about culling. Show results in a pie graph. INV 24		
Interactions in the environment: Predation, competition, interspecific & intraspecific competition, specialisation, parasitism, mutualism, commensalism Social organisation	Week 31, 32 11 – 22 Sept		60,61,62 63	Draw a life cycle of the bilharzia parasite or tapeworm (simplify larval stages). (Links to animal biodiversity) INV 25		Practical exam 21/09

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Succession Human population: age and gender distributions, forecast of South Africa's population growth	Week 33 25-29 Sept		64 65,66	Identify an area in or close to the school grounds where succession is taking/has taken place. (e.g., in the goal area on the sports field at the end of a season or a roadside that has been scraped) INV 26		Formal test 2.3 14/09
TERM 4						
Human Impact on the Environment The atmosphere and climate change	Week 34 09-13 Oct		67,68	Practical observation of ONE example of human influence on the environment in the local area (e.g., the impact of alien species on biodiversity). Written report on the chosen example. INV 27		
Water: Availability & Quality	Week 35 16 -20 Oct		69 , 70			
Food security	Week 36 23 - 27 Oct		71, 72			Test 2.4 26/10
Loss of Biodiversity	Week 37 30 Oct- 03 Nov		73,74	Rhino poaching in South Africa: read articles and make suggestions on how it can be prevented INV 28		
Solid waste disposal	Week 38 06 – 10 Nov		75,76	Analyse the solid waste generated in the household in one week, including paper, metals and plastic. Estimate the percentage that could be recycled or		

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				reused. INV 29 • Visit a municipal landfill site, or a local refuse dump. Observe rehabilitation (or lack thereof) in practice. INV 30 • Assess the effectiveness of waste management INV 31		Examination Paper 1 08/11 Paper 2 15/11
Examination	Weeks 39,40,41					