PROVINCE OF THE

EASTERN CAPE

EDUCATION

DIRECTORATE:

FET CURRICULUM FET PROGRAMMES

LESSON PLANS

TERM 4

LIFE SCIENCES GRADE 10

FOREWORD

The following Grade 10 Lesson Plans were developed by Subject Advisors during August 2009. Teachers are requested to look at them, modify them where necessary to suit their contexts and resources. It must be remembered that Lesson Plans are working documents, and any comments to improve the lesson plans in this document will be appreciated. Teachers are urged to use this document with the following departmental policy documents: Subject Statement; The new content framework in Circular S7 of 2007; SAG 2008, Grade 10 Exemplar Work Schedule 2009 and Provincial CASS Policy / Guidelines.

Lesson planning is the duty of each and every individual teacher but it helps when teachers sometimes plan together as a group. This interaction not only helps teachers to understand how to apply the Learning Outcomes (LOs) and Assessment Standards (ASs) but also builds up the confidence of the teachers in handling the content using new teaching strategies.

It must please be noted that in order to help teachers who teach across grades and subjects, an attempt has been made to **standardise lesson plan templates** and thus the new template might not resemble the templates used in each subject during the NCS training. However, all the essential elements of a lesson plan have been retained. This change has been made to assist teachers and lighten their administrative load.

Please note that these lesson plans are to be used only as a guide to complete the requirements of the Curriculum Statements and the work schedules and teachers are encouraged to develop their own learner activities to supplement and /or substitute some of the activities given here (depending on the school environment, number and type of learners in your class, the resources available to your learners, etc).

Do not forget to build in the tasks for the Programme of Assessment into your Lesson Plans.

Strengthen your efforts by supporting each other in clusters and share ideas. Good Luck with your endeavours to improve Teaching, Learning and Assessment.

SUBJECT: LIFE SCIENCES GRADE: 10 LESSON PLAN 1 TERM 4 TIME: 8 hrs

Focus Learning Outcome/s:	LO2 AS 1, 2 & 3
Integrated Life Sciences LOs and ASs:	LO1# AS1, AS2, AS3, LO2# AS1,AS2,AS3 and LO3# AS1, AS2, AS3
Possible integration with other subjects	AGRICULTURAL SCIENCE,GEOGRAPHY
Knowledge Area	LIFE PROCESSES IN PLANTS AND ANIMALS
Prior Knowledge	PLANT AND ANIMAL NUTRITION
Topic	HUMAN NUTRITION
Links to next lesson	

LEARNING OUTCOME 1: Scientific Inquiry & Problem solving Skills.		**LEARNING OUTCOME 2:** Constructs & Application of Life Sciences Knowledge.		**LEARNING OUTCOME 3:** Life Sciences and its relationships to Technology, and the Environment.
AS1: Learner identifies and questions phenomena and plans an investigation	√	*AS1: Learner accesses knowledge*	√	*AS1: Learner explores & evaluates scientific ideas of past and present cultures*
AS2: Learner conducts an investigation by collecting and manipulating data	√	*AS2: Learner interprets and makes meaning of knowledge*	√	*AS2: Learner compares & evaluates uses and developments of resources and their products & their impact on the environment & society.*
AS3: Learners analyses, synthesizes, evaluates data and communicates findings	√	*AS3: Learner shows understanding of how Life Sciences knowledge is applied in everyday life*	√	*AS3: Learner compares the influence of different beliefs, attitudes and values on scientific knowledge*

TEACHING ACTIVITIES	**LEARNERS ACTIVITIES**	**RESOURCES**	**ASSESSMENT**	**DATE COMPLETED**
Teacher defines chemical digestion. With the aid of table chemical digestion is explained under the following subheadings: • Enzymes (carbohydrases, proteases,lipases) • Name of glands that produce enzymes • Substrate • End –products	Taking notes. Transcribe the table with understanding.	Worksheets Textbooks.	Informal Q & A	

TEACHER ACTIVITIES	LEARNER ACTIVITIES	RESOURCES	ASSESSMENT	DATE COMPLETED
Teacher explains absorption under the following headings : • Small intestine (the region of most absorption) • The structure and significance of villus. • The role of hepatic portal system	The learner do the following : • Take notes. • Draw the diagram of villus	Workbooks Textbooks Lead pencils rubber	Informal assessment using a rubric.	
The teacher explains the role of liver in : • Glucose metabolism • Deamination of excess amino acids • Breakdown of alcohol,drugs and hormones Teacher gives learners instructions to research from various sources about the effects of alcohol and drug abuse. Teacher consolidates and augments the activity	Learners are taking notes. Learners access information from various sources,discuss in groups and make presentations in class Learners write summary notes.	Workbooks Magazines Hospitals clinics flyers Interviews	Informal assessment	
Teacher instructs learners to do concept map about human nutrition	Learners as individuals do concept map to summarize the human nutrition section	Workbooks textbooks	Informal class test and a memorandum	
Homework: The learners are tasked to make a daily glossary of new biological terms used throughout this lesson				
Enrichment/Expanded Opportunities: Additional informative articles ,Learners are given relevant internet sites				

Teacher Reflections

SIGNATURES:

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TEACHER	DATE	HOD / SMT	DATE

SUBJECT: LIFE SCIENCES GRADE: 10 LESSON PLAN 2 TERM 4 TIME: 8 hrs

Focus Learning Outcome/s:	LO2 AS 1, 2 & 3
Integrated Life Sciences LOs and ASs:	LO1# AS1, AS2, AS3, LO2# AS1, AS2, AS3, LO3# AS1, AS2, AS3
Possible integration with other subjects	AGRICULTURAL SCIENCE,CONSUMER STUDIES
Knowledge Area	LIFE PROCESSES IN PLANTS AND ANIMALS
Prior Knowledge	Human nutrition
Topic	Cellular Respiration
Links to next lesson	Gaseous exchange

LEARNING OUTCOME 1: Scientific Inquiry & problem Solving Skills.		**LEARNING OUTCOME 2:** Constructs & Application of Life Sciences Knowledge.		**LEARNING OUTCOME 3:** Life Sciences and its relationships to Technology, Society and the Environment.	
AS1: Learner identifies and questions phenomena and plans an investigation	√	AS1: Learner accesses knowledge	√	AS1: Learner explores & evaluates scientific ideas of past and present cultures	√
AS2: Learner conducts an investigation by collecting and manipulating data	√	AS2: Learner interprets and makes meaning of knowledge	√	AS2: Learner compares & evaluates uses and developments of resources and their products & their impact on the environment & society.	√
AS3: Learners analyses, synthesizes, evaluates data and communicates findings	√	*AS3: Learner shows understanding of how Life Sciences knowledge is applied in everyday life*	√	*AS3: Learner compares the influence of different beliefs, attitudes and values on scientific knowledge*	√

TEACHER ACTIVITIES	**LEARNER ACTIVITIES**	**RESOURCES**	**ASSESSMENT**	**DATE COMPLETED**
ACTIVITY 1: Aerobic and Anaerobic Respiration LO 2 : AS 1, 2 & 3 Teacher defines and describes the process of cellular respiration. He further describes the two types : 1. Aerobic respiration. 2. Anaerobic respiration (with production of lactic acid in muscles during exercise mentioned) The teacher explains the site of aerobic respiration as cytoplasm and mitochondrion. Instructs the learners to	Learners make summary notes. Learners draw and fully label a mitochondrion.	Text book and work book Charts	Class work	

draw a mitochondrion. Teacher facilitates the drawing of a table that compares aerobic and anaerobic. The teacher elaborates on the role of ATP as an important energy carrier in the cell.	Learners draw a table of comparison between aerobic and anaerobic respiration in terms of the following : • Raw materials required • Products. • Amount of energy released Learners taking notes.			
ACTIVITY 2: Experimental investigation on the release of carbon dioxide by living organisms. LO1: AS1, 2 & 3 Teacher demonstrates the experiment that shows the release of carbon dioxide by living organism. The teacher sets up the experiment as well as the control. Learners are given a worksheet to complete. Consolidates the discussions and write up of findings.	Observe, ask questions and complete the worksheet. Or Learners do the experiment in groups.	Worksheets, test tube, lime water germinating seeds and boiled seeds, any suitable material.	Informal class work	
ACTIVITY 3: BEER MAKING – traditional and modern: LO1: AS2 &3; LO2: AS1, 2 &3; LO3: AS2 & 3 Invites a community member to demonstrate the brewing of traditional beer. (The community member should be invited well in advance) Instructs learners to research and prepare a poster on the industrial production of fermented beer	**O**bserve, assist, ask questions and take notes Carry out the research	Community member, maize meal/sorghum, yeast, water Text books, internet and library reference books	Rubric	
Discusses the role of anaerobic respiration in industry(beer making and bread making)	Listen and ask questions and take notes	Text book		
Instructs learners to draw a concept map that summarises the process of respiration	Learners draw the concept map individually	Work book	Checklist	

Homework:

The learners are tasked to make a daily glossary of new biological terms used throughout this lesson.

Enrichment/Expanded Opportunities:

Learners are given additional informative articles , relevant internet sites, brochures, etc. teacher organizes excursions to South African Breweries.

Teacher Reflections:

SIGNATURES:

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TEACHER	DATE	HOD / SMT	DATE

SUBJECT: LIFE SCIENCES GRADE: 10 LESSON PLAN 3 TERM 4 TIME: 20 hrs

Focus Learning Outcome/s:	LO2 AS 1, 2 & 3
Integrated Life Sciences LOs and ASs:	LO1# AS1, AS2, AS3, LO2# AS1, AS2, AS3, LO3# AS1, AS2, AS3
Possible integration with other subjects	AGRICULTURAL SCIENCE
Knowledge Area	LIFE PROCESSES IN PLANTS AND ANIMALS
Prior Knowledge	Cellular respiration
Topic	Gaseous exchange
Links to next lesson	

LEARNING OUTCOME 1: Scientific Inquiry & problem Solving Skills.		**LEARNING OUTCOME 2:** Constructs & Application of Life Sciences Knowledge.		**LEARNING OUTCOME 3:** Life Sciences and its relationships to Technology, Society and the Environment.	
AS1: Learner identifies and questions phenomena and plans an investigation	√	AS1: Learner accesses knowledge	√	AS1: Learner explores & evaluates scientific ideas of past and present cultures	
AS2: Learner conducts an investigation by collecting and manipulating data	√	AS2: Learner interprets and makes meaning of knowledge	√	AS2: Learner compares & evaluates uses and developments of resources and their products & their impact on the environment & society.	
AS3: Learners analyses, synthesizes, evaluates data and communicates findings	√	*AS3: Learner shows understanding of how Life Sciences knowledge is applied in everyday life*	√	*AS3: Learner compares the influence of different beliefs, attitudes and values on scientific knowledge*	√

TEACHER ACTIVITIES	**LEARNER ACTIVITIES**	**RESOURCES**	**ASSESSMENT**	**DATE COMPLETED**
ACTIVITY 1: Concepts and requirements of efficient gaseous exchange. LO2 # AS1, 2 & 3 Differentiates between the concepts of respiration, breathing and gaseous exchange. Instructs learners to discuss in groups the need for gaseous exchange and to make presentation. Teacher consolidates the information, correcting misconceptions.	Listen, take notes Discuss in groups and present Listen ,take notes	Text book workbook Brochures, Magazines, charts	Question and answer Peer / self	

TEACHER ACTIVITIES	LEARNER ACTIVITIES	RESOURCES	ASSESSMENT	DATE COMPLETED
Provides learners with article/s on gaseous exchange requirement s of various aquatic and terrestrial plants and animals (dicot plant, flatworm, earthworm, locust, bony fish, and rat) Instructs learners to identify the requirements of efficient gaseous exchange organs in relation to the habitat Teacher consolidates , corrects and supplements information.	Read and discuss the article/s Identify the requirements and present in class. Listen and make notes	Written article	Peer	
ACTIVITY 2 : Human gaseous exchange **LO2 AS1 , AS2** Shows a chart of a human breathing system and explains the structure and function of ventilation system. Instructs learners to make a labeled drawing of human breathing system and to discuss its structural suitability for efficient gaseous exchange.	Listen, take notes , draw the breathing system and present on structural suitability for gaseous exchange.	Chart X ray of the lungs Workbook text book	Rubric	
I **ACTIVITY 3 : Practical work on gaseous exchange** **LO1 AS1 , AS2 and AS3** Instructs learners to make a model of human breathing system, to demonstrate how it works and to critique it.	In groups collect suitable material to build model. Demonstrates how it works. Explain the limitation of their model	2L bottle, straws, balloons and a rubber tube or any suitable material	Rubric	
Teacher gives a demonstration to show that expired air contains carbon dioxide. Provides a worksheet to be filled by learners	Observe and complete the worksheet	Test tube, expired air and limewater	Memo	

Instructs learners to carry out an investigation to measure lung capacity average in class. Provides learners with the apparatus , instructions and worksheet	Formulate a hypothesis Carry out the investigation. Collect and record data Analyse data Communicate their findings in writing Answer the worksheet	5L plastic bottle, plastic basin , measuring cup, plastic tube, two small blocks of wood or plastic, water. Any suitable materials	Rubric and memo	
ACTIVITY 4: Gaseous exchange in lungs and tissues **LO1: AS3; LO2: AS1, 2 & 3** Using diagrams/charts explains ventilation, gaseous exchange between lungs and blood, gaseous exchange between blood and tissues, transport of gases.	Listen, take notes and ask questions	Charts Textbooks Workbooks	Class work Memo	
Provide learners with data on altitudinal effects on gaseous exchange. Instructs learners to analyse and interpret the data and to present the data graphically. Further elaborates on the effects of altitude on gaseous exchange	Examine data Analyse it Plot graph Make deductions Draw conclusions based on their deductions	Textbook Graph paper Data	Memo	
Explains homeostatic control of breathing using diagram of brain, breathing system and heart.	Listen and take notes and ask questions	Textbook	Class work	
ACTIVITY 5: Gaseous exchange and society **LO2 :AS1, 2 & 3; LO3 :AS3** Instructs learners to do a research and prepare a poster on respiratory disorders e.g T.B, Asthma, Hay fever, Bronchitis and lung cancer, under the following: • Origins • Symptoms • Treatment	Perform the research Compile and display the poster in groups. Learners do a gallery walk from poster to poster with one learner explaining each poster.	Text books Magazines internet	Rubric and memo	

TEACHER ACTIVITIES	LEARNER ACTIVITIES	RESOURCES	ASSESSMENT	**DATE COMPLETED**
Instructs learners to debate on the effects of smoking on gaseous exchange.	Form debating groups. Research about the topic. Participate actively in debating.	Newspapers Magazines Textbooks Internet Clinics Hospitals.	Checklist	
Invites a health practioner to demonstrate mouth to mouth resuscitation (The health practitioner should be invited well in advance).	Observe, take notes and ask questions for clarity. Practice the demonstration	Health practitioner Workbook	Peer assessment Q & A	
Revision on gaseous exchange	Revision on gaseous exchange	Textbooks Workbooks	Informal test	
ACTIVITY 6: Revision for final examinations • Reminds learners about the structure of the final papers. • Uses past examination papers, exemplar question papers, study guides, textbooks to revise P1 and P2 topics with learners. • Give learners study tips and how to deal with various types of questions.	Actively involve themselves with studying and revision	Past examination papers exemplar question papers study guides textbooks	Informal different classroom activities	
Homework:				
Expanded opportunities				
Teacher Reflections				

SIGNATURES:

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TEACHER DATE HOD / SMT DATE