AGRICULTURE SYLLABUS

GRADE 9 2020

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1. INTRODUCTION

1.1 Rationale

The Grade 9 Agriculture syllabus is a one - year programme of study which builds up on the foundation of the basic education. This syllabus will impart to learners the cognitive, psychomotor and affective skills, therefore preparing learners for Grade 10 and self-employment. It is based on four **Curriculum Aspects** which highlight the life challenges and contexts in which the learner is expected to function as an individual and a member of a society. These are: *Effective Communication; Environmental Adaptation and Sustainable Development; Health and Healthy Living* and *Production and Work-related Competencies.*

Through this syllabus the learners will:

- be responsible for themselves, responsive to and respectful of others;
- recognise that as information in its various forms becomes more accessible, need to develop higher cognitive skills of analysis, interpretation and evaluation to use information effectively; (*reflective as learners, developing their ability to learn*);
- be innovative and equipped for new and further challenges;
- be engaged intellectually and socially, ready to make a difference;
- be provided with an insight and understanding of crucial global issues in a rapidly changing world which affect quality of life: the AIDS pandemic, global warming, environmental degradation, maldistribution of wealth, expanding and increasing conflicts, the technological explosion and increased connectivity.

Thus the Grade 9 Agriculture syllabus will provide opportunities for developing essential, key skills across the various fields of study. Such skills cannot be developed in isolation and they may differ from context to context according to a field of study. The major focus of this syllabus is to promote an appreciation of agriculture as an applied science that will allow learners to explore existing agricultural/ scientific knowledge, skills and attitudes acquired from the study of science and other subjects to address environmental (including Impacts of Climate Change and Climate Smart Agriculture) and socio-economic issues in their day to day lives.

The knowledge and skills acquired from the syllabus will contribute directly to the development of the skills and abilities such as communication; information handling skills; numeric skills; problem-solving skills; social and cooperative skills; self-management and competitive skills; work and study skills; critical and creative thinking; and initiative and independence. Learners will also develop the ability to apply scientific skills; principles; methods and demonstrate their appreciation of agriculture as a profitable business to the individual, community; nation; the region (Southern African Development Countries) and globally.

1.2SYLLABUS CONTENT AT A GLANCE

1.2.1The content of this syllabus is designed to encourage a broad, applied and practical Science-based study of agriculture. It includes:

1.2.1.1 General agriculture including principles of land use.
1.2.1.2 Soil types, structure and fertility.
1.2.1.3 Principles of plant growth.
1.2.1.4 Production of vegetables of local importance.
1.2.1.5 Commercial livestock production.
1.2.1.6 Range management systems.
1.2.1.7 Farm tools and implements.
1.2.1.8 Livestock anatomy and physiology (digestive system) of ruminant, non-ruminant and bird.
1.2.1.9 Poultry production.

2. SYLLABUS AIMS AND OBJECTIVES.

2.1AIMS

The syllabus aims are to:

2.1.1 promote an appreciation of agriculture as an applied science;
2.1.2 stimulate an interest in, and create an awareness of existing problems and opportunities in agriculture;
2.1.3 stimulate positive attitudes by showing that efficient farming can be profitable and rewarding occupation;
2.1.4 demonstrate the value of agriculture to the family and community, so as to show how improved agriculture can contribute to the worldwide campaign for freedom from hunger;
2.1.5 encourage the teaching, in a practical manner, of basic principles and skills in agriculture and of efficient farm business management;
2.1.6 ensure that school takes an active part in rural development by integration of agricultural activities into the school curriculum;
2.1.7 harness and conserve essential agricultural indigenous knowledge and experiences in order to promote biodiversity;
2.1.8 encourage the development of practical areas, ensuring that learners actively participate in the farming event throughout the course, including weekend and during school holidays;
2.1.9 develop initiative, problem solving abilities, scientific methods and self-education so as to encourage resourcefulness and self-reliance;
2.1.10 enhance practical and vocational skills in entrepreneurial competencies and self- reliance for sustainable development; and
2.1.11 provide a basis, together with the basic science and mathematics, for more advanced studies in agriculture.

2.2 OBJECTIVES

The main objective of the syllabus is therefore to equip learners with the necessary knowledge, skills and attitude that will enable them to enter Grade 10and/or the world of work.

2.3 DESCRIPTION OF ASSESSMENT OBJECTIVES (AOs)

There are three assessment objectives that describe the knowledge, skills and abilities that candidates are expected to demonstrate at the end of Grade 9. They reflect those aspects of the aims that will be assessed.

AO1 Knowledge with understanding

Candidates should be able to demonstrate agricultural knowledge and understanding in relation to the correct use of:

1. facts, concepts, principles pattern, models and theories
2. terms, symbols, quantities and units
3. the techniques, procedures and principles of safe agricultural practice

The subject content defines the factual knowledge that the candidates may be required to recall and explain. Questions testing these objectives will often begin with one of the following words: *define, state, name, describe, explain or outline.*

AO2 Handling information, application and problem solving

Candidates should be able - using oral, written, symbolic, graphical and numerical forms of presentation to:

1. locate, select, organise and present information from a variety of sources;
2. translate information to identify patterns, report trends and draw inferences;
3. use information to identify patterns, report trends and draw inferences;
4. present reasoned explanations for phenomena, patterns and relationship
5. make predictions and propose hypothesis
6. solve problems, including some of a quantitative nature

These assessment objectives cannot be precisely specified in the content because questions testing such skills may be based on information that is unfamiliar to the candidates. In answering such questions, candidates are required to use principles and concepts that are within the syllabus and apply them in a logical, reasoned or deductive manner to a novel situation. Questions testing these objectives will often begin with one of the following words: discuss, predict, suggest, calculate, or determine.

AO3 Practical skills and investigations

Candidates should be able to:

1. use and organize techniques, apparatus and material; use and organize techniques, apparatus and materials;
2. observe, measure and record;
3. interpret and evaluate experimental observations and data;

4. plan and carry out investigations (and, where appropriate, make predictions and propose hypothesis).

2.4ASSESSMENT GUIDE AND DESCRIPTION OF PAPERS

2.4.1 Relationship between assessment objectives are summarized in the table below:

ASSESSMENT OBJECTIVE	APPROXIMATE WEIGHTING
AO1: Knowledge with understanding	30%
AO2: Handling information and problem solving	40%
AO3: Experimental skills and investigations	30%

Teachers should take note that there is greater weighting of 70% for skills (including handling information, problem solving, practical, and experimental and investigation skills) than for knowledge and understanding which 30% is. Teachers' scheme of work and sequence of learning activities should reflect this balance, so that the aims of the syllabus may be met and the candidates are fully prepared for assessment.

2.4.2 Specification Grid

ASSESSMENT OBJECTIVE	Paper 1 (marks)	Paper 2 (marks)
AO1: Knowledge with understanding	43	0
AO2: Handling information and problem solving	57	0
AO3: Experimental skills and investigations	0	90

2.4.3 GRADE DESCRIPTORS

Criteria for the standard of achievement likely to have been shown by candidate awarded Grades **A, B** and **F** are shown below. The standard of achievement required for the award of Grade **C,** include the criteria for Grade **F**. Similarly, the standard of achievement required for the award of Grade **A** includes criteria for Grade **C**.

Grade A candidate should be able to:

- relate facts to principles and theories and vice versa.
- state why particular techniques are preferred for a procedure or operation.
- select and collect information from a number of sources and present it in a clear, logical form.
- process data from a number of sources to identify patterns and trends.
- generate a hypothesis to explain facts, or find facts to support a hypothesis

Grade C candidate should be able to:

- link facts to situations not specified in the syllabus.
- describe the correct procedure(s) for a multi-stage operation.

- select a range of information from a given source and present it in a clear, logical form.
- identify patterns or tends in a given information.
- solve problems involving more than one step, but with a range of variables.
- generate a hypothesis to explain a given set of facts or data.

Grade F candidate should be able to:

- recall facts contained in the syllabus.
- indicate the correct procedure for a single operation.
- select and present a single piece of information from a given source.
- solve problems involving one step or more step if structured help is needed.
- identify a few patterns or trends where minor manipulation of data is needs.
- recognize which of two given hypothesis explains a set of facts or data.

2.4 ASSESSMENT AT GLANCE

The syllabus will be assessed in two ways that is theory and coursework

Paper 1	**Theory**
Duration	**1 hour 45 minutes**
This paper has two sections Section A: consists of compulsory, short, structured questions worth 70 marks. Section B: Candidates answer two out of five free response questions, each question is worth 15 marks Total marks : 100 marks Weighting: 70 %	

Paper 2	**Teacher assessed Coursework-Testing and Investigatory Skills**
Coursework assessment marked by teacher and moderated by Examination Council of Lesotho. Detailed instruction for teacher assessment will be available from Examination Council of Lesotho. When planning practical work, teachers should make sure they do not contravene any school, Education authority and Examination Council of Lesotho regulations. Total marks :90 (Practical skills 60, investigatory skills 30) Weighted: 30 (Practical skills 20%, investigatory skills 10%)	

3. LEARNING CONTENT

3.1 The curriculum content outlined below is designed to provide guidance to teachers as to what will be assessed in the overall evaluation of learners. They are not meant to limit, in anyway, the teaching programme of any particular school.

3.2 The learning content is set out in five columns.

- Learning Objective (LO)
- Concepts, skills, values and attitudes.
- Suggested learning experiences
- What to assess
- Suggested learning and teaching resources.

3.3 A Learning Objective (LO) refers to those components of the subject which learners are required to study. The **General Objective** is derived from the topic and comprises the general knowledge, understanding and demonstration of skills on which learners may be assessed. The **Specific Objectives** are the detailed and more specified topics of the syllabus which are likely to be assessed. The content material is divided into the following sections:

- General Agriculture
- Soil
- Range
- Crop Husbandry
- Livestock Husbandry
- Farm tools and Implements.

4. DEFINITION OF TERMINOLOGY USED:

1. **Concept**: a general idea which emerges from a specific situation; once understood it can be applied to different contexts to promote understanding. For example, the concept of the family emerges from awareness of the familiar unit in which people live; it can be applied to groups of animals, plants or words which naturally belong together.
2. **Skills**: abilities which every learner is expected to acquire to help them learn and live well in society; they can be mental, physical or social.
3. **Values**: qualities which are considered to be important, worth preserving and transmitting to the younger generation. For example, Basotho consider honesty and respect to be essential values.
4. **Attitudes:** positions or opinions, what is appreciated or disliked by an individual or a group.
5. **A list of suggested learning experiences:** teaching and learning activities designed to enable learners to achieve a given learning outcome. This is not exhaustive and the teacher is free to use other complementary activities.
6. **What to assess:** in this column, the learning outcome is broken down into several specific, measurable and observable points, against which the teacher can check the learner`s progress. These focus on the process and characteristics of learning rather than the final outcome.
7. **A list of suggested resources:** a list of possible items, materials, persons (etc.) which may be used to help achieve a given learning outcome. This is designed to help all teachers, however many or few resources may be available in their schools and communities.

Grade 9 Agriculture Syllabus
Overview

Learning Outcomes (LOs): At the end of Grade 9, learners should be able to:
1. describe developmental stages in agriculture**.**
2. describe different forms of land use.
3. describe soil types.
4. describe impact of soil structure in agricultural production.
5. describe soil fertility and pH.
6. describe developmental stages of a plant.
7. demonstrate commercial production of vegetables of local importance.
8. apply commercial livestock production.
9. describe range management principles and practices.
10. describe use of farm tools and implements.
11. describe livestock anatomy and physiology.
12. describe management of poultry.

Grade 9 Agriculture Syllabus
Activity Plan

At the end of Grade 9, learners should be able to:	Concepts, skills, values and attitudes	Suggested learning experiences	What to assess: teacher assesses learner's ability to:	Suggested resources
1. describe developmental stages in agriculture.	**Concepts** **Developmental stages:** hunting and gathering; shifting cultivation; pastoral nomadism; domestication; and settling. **Farming systems:** intensive farming; and extensive farming. **Farming practices:** mono cropping; monoculture; crop rotation; mixed cropping; and mixed farming. **Skills** Identification	• Teacher explains developmental stages in agriculture. • Teacher and learners discuss advantages and disadvantages of each stage. • Learners identify from their local environment animals and plants that are in existence and extinct due to some of developmental stages in agriculture. • Teacher and learners take a field trip to observe tools used during the developmental stages and their usage to a nearby museum or	outline developmental stages in agriculture. list advantages and disadvantages of each stage. list animals and plants that are in existence and extinct due to some of the developmental stages in agriculture. report their findings from the field trip on tools used during the developmental stages in agriculture. state advantages and disadvantages of farming systems. list differences between	Garden tools. Arable land. Charts. Internet.

	Comparison Observation Manipulation Reporting Workmanship Problem – solving Decision - making Cooperation **Values and Attitudes** Appreciation Awareness	farmers. • Teacher defines intensive and extensive farming. **Teacher and learners:** • discuss advantages and disadvantages of intensive and extensive farming systems. • differentiate intensive from extensive farming systems. • Learners observe the types of farming systems engaged by farmers in their locality. • Under the guidance of the teacher, learners in groups engage in crop production using different farming practices.	extensive and intensive farming systems. report the types of farming systems practiced by local farmers. carry out practical activities using different farming practices.	

At the end of Grade 9, learners should be able to:	Concepts, skills, values and attitudes	Suggested learning experiences	What to assess: teacher assesses learner's ability to	Suggested resources:
2. describe different forms of land use.	**Concepts** Forms of land: Land classes I to VIII Characteristics of land classes **Land uses:** forestry; aquaculture; urban agriculture; arable farming; rangeland; human settlement; wildlife; and recreational use. Limiting factors for land use. **Climatic factors:** rainfall; temperature; fire;	• Under the guidance of the teacher, learners observe different land forms found locally. **Teacher and learners:** • discuss the uses of each land form observed. • discuss different land classes, characteristics and uses of each using a chart. **Learners:** • identify factors limiting the use of land. • classify factors limiting land use under climatic, environmental, social and economic and political.	outline different forms of land use. give different land classes. relate characteristics of each land class to proper use. outline climatic factors limiting land use. outline environmental factors limiting land use. outline socio-economic factors limiting land use. outline political factors limiting land use. report about an educational trip.	Land capacity. Classification chart. Field trip. Local environment.

	frost; and climate change. **Environmental factors:** loss of habitat; plant and animal population growth; predation and competition with livestock. **Social factors:** inappropriate land use planning; illegal hunting; human population growth; and lack of education. **Economic factors:** illegal harvesting of indigenous plant and animal species; illegal sales of arable land; and industrialization. **Political factors:**	**Teacher and learners:** • discuss effects of climate change on land use. • take an educational trip to one of aquaculture, wildlife and recreational places to observe a form of land and its use.		

	policy making and **Skills** Observation Comparison Reporting Critical thinking Cooperation Problem-solving Decision-making **Values and Attitudes** Appreciation Awareness			

At the end of Grade 9, learners should be able to:	Concepts, skills, values and attitudes	Suggested learning experiences	What to assess: teacher assesses learner's ability to:	Suggested resources
3. describe soil types.	**Concepts** soil composition soil type properties **Skills** Identification Comparison Critical thinking Experimentation Cooperation Manipulation Observation Drawing Report writing **Values and Attitudes** Appreciation Patience	• Learners carry out an experiment to identify and describe the components of soil in terms of air, inorganic (weathered) material, water, organic matter (humus) and show their proportions in a soil sample. • Learners carry out an experiment to separate and identify soil particles into sand, silt, clay, gravel and humus. • Learners carry out an experiment to identify properties of sandy, loam and clay soils in terms of particle size, pore space, water retention, temperature,	state the components of soil in terms of air, inorganic (weathered) material, water, organic matter (humus) and show their proportions in a soil sample. carry out an experiment to separate and identify soil particles into sand, silt, clay, gravel and humus. carry out an experiment to identify properties of sandy, loam and clay soils in terms of particle size, pore space, water retention, temperature, cultivation and root penetration. report results of experiments carried out.	Soil samples. Water. Transparent container. Sieves. Internet.

		cultivation and root penetration.		

At the end of Grade 9, learners should be able to:	Concepts, skills, values and attitudes	Suggested learning experiences	What to assess: teacher assesses learner's ability to:	Suggested resources
4. describe impact of soil structure in agricultural production.	**Concepts** Soil structure: Importance of soil structure in relation to: plant production soil erosion dam construction **Skills** Manipulation Observation Critical thinking **Values and Attitudes** Cooperation Awareness	**Teacher and learners revise:** • different types of soil structure (single grain, crumby, blocky and platy). • the characteristics of each type. • factors affecting soil structure • ways of improving soil structure. **Teacher and learners discuss:** • the importance of soil structure in relation to: ○ crop production ○ soil erosion ○ dam construction • In groups, learners practice the methods of improving soil structure on their plots.	describe the importance of soil structure in relation to crop production, soil erosion and dam construction. demonstrate the methods of improving soil structure on their plots.	Soil samples. Charts. Posters. Environment.

At the end of Grade 9, learners should be able to:	Concepts, skills, values and attitudes	Suggested learning experiences	What to assess: teacher assesses learner's ability to:	Suggested resources
5. describe soil fertility and pH.	**Concepts** Organic and inorganic fertilizers Types of fertilizers Methods of fertilizer application Soil pH **Skills** Manipulating Observing Identifying Problem solving Decision making Evaluating Recording Measuring **Values and Attitudes** Caring Responsibility Awareness Appreciation	**Teacher and learners:** • Revise soil fertility done in the previous grades. • discuss organic and inorganic fertilizers. • discuss the importance of organic and inorganic fertilizers to the soil. • discuss effects of organic and inorganic fertilizers to the soil. • discuss the decomposition of organic manure. • discuss effects and maintenance of organic manure. • discuss methods of fertilizer application. **Learners:**	state the importance of organic and inorganic fertilizers. differentiate organic from inorganic fertilizers. state ways in which soil fertility can be improved and maintained. carry out a project on decomposition of organic manure. state the effects of organic manure on soil fertility. carry out an activity using different methods of fertilizer application. state the methods of pH	Chemical fertilizers. Manure. pH scale. Universal indicator solution and paper. Litmus paper. Soil.

		• discuss differences with examples between organic and inorganic fertilizers. • identify ways in which soil fertility can be improved and maintained. • carry out an activity to decompose organic manure. • practice different methods of fertilizer application. **Teacher and learners:** • discuss pH testing and identify the methods used. • discuss the effects of pH on soil fertility **Teacher:** • demonstrates soil sampling techniques. • collects and shows the	testing. determine soil pH using the different methods. state the effects of pH on soil fertility. outline the methods of controlling soil pH.	

		soil pH testing equipment. **With the guidance of the teacher:** • learners carry out an experiment to determine soil pH. • learners identify methods of controlling soil pH		

At the end of Grade 9, learners should be able to:	Concepts, skills, values and attitudes	Suggested learning experiences	What to assess: teacher assesses learner's ability to:	Suggested resources
6. describe developmental stages of a plant.	**Concepts** seed structure: monocotyledons dicotyledons Germination: conditions necessary for germination process of germination	**Teacher and learners:** • Teacher assigns learners to bring different seeds. **Teacher and learners:** • classify seeds into monocots and dicots. • identify different parts	draw and label the parts of the seed. outline the process of seed germination. state and explain types of seed germination.	Diagram. Specimen. Seeds. Petri dishes/bottle.

	types of germination. **Skills** Experimentation Critical thinking Observation Comparison Identification Reporting **Values and Attitudes** Awareness Appreciation	of the seeds. • discuss functions of different parts of the seeds. • Learners draw and label the structure of a monocot and a dicot seed. **Teacher and learners:** • discuss conditions necessary for seed germination. • discuss process of germination. • discuss germination of monocotyledonous and dicotyledonous seeds with the help of seed specimens and diagrams. • identify and describe the types of seed germination.	describe conditions necessary for seed germination. differentiate types of seed germination.	Cotton wool. Water. Flask. Charts.

		Learners carryout an experiment showing: • conditions necessary for seed germination. • types of seed germination.		

At the end of Grade 9, learners should be able to:	**Concepts, skills, values and attitudes**	**Suggested learning experiences**	**What to assess: teacher assesses learner's ability to:**	**Suggested resources**
7. demonstrate commercial production of vegetables of local importance.	**Concepts** Economic importance of vegetables Choice of cultivar Methods of sowing Management practices Harvesting and storage Marketing Budgeting **Skills** Observation Identification	**Teacher and learners revise:** • factors to consider when selecting site for crop production. • practices done during soil preparation **Learners:** • identify suitable site for vegetable production. • demonstrate how to prepare land for producing vegetable	give economic importance of vegetable production. explain the methods employed in the production of one vegetable, crop in relation to; soil and climatic requirement, seedbed preparation, sowing/planting time, seed rate, prevention and control of common pests, weeds and diseases, recognition of maturity, harvesting and storage.	Local environment. Charts. Garden tools and machinery. Seeds/ seedlings. Catalogue. Order book.

	Manipulation Problem - solving Decision - making Evaluation Recording Measurement Workmanship Competence **Values and Attitudes** Caring Responsibility Awareness Appreciation Cooperation	crops. • discuss factors to consider when choosing cultivars. **Teacher and learners:** • discuss economic importance of vegetable production. • discuss the importance of business plan in commercial vegetable production. • prepare a budget for inputs used in commercial vegetable production. • prepare a shopping list for inputs used in commercial vegetable production. • discuss the methods employed in the production of one vegetable in relation to; soil and climatic	state vegetable crops according to their use and products found in their localities. draw a business plan for commercial vegetable production. draw a budget for inputs used in commercial vegetable production. prepare a shopping list of inputs used in commercial vegetable production. carry out a market research. carry out a practical project to produce at least one vegetable crop.	

		requirements, seedbed preparation, sowing/planting time, seed rate, prevention and control of common pests, weeds and diseases, recognition of maturity signs, harvesting and storage. **Learners:** • draw a business plan based on the feasibility study conducted locally. • undertake a practical activity to produce at least one vegetable crop. • identify marketing strategies that can be employed for each vegetable crop and carry out marketing exercise.		

At the end of Grade 9, learners should be able to:	Concepts, skills, values and attitudes	Suggested learning experiences	What to assess: teacher assesses learner's ability to:	Suggested resources
8. apply commercial livestock production.	**Concepts** Ruminant (cattle, sheep and goats) Non- ruminant (pig) Uses of each livestock Breeds of each livestock Management practices Processing Marketing Budgeting **Skills** Identification Manipulation Observation Calculations Problem – solving Decision – making	**Teacher and learners:** • revise commercial livestock production from the previous grade. • classify livestock into ruminants and non – ruminants. • discuss uses of each type of livestock. • discuss breeds of each type of livestock. • discuss management practices for each type of livestock. • discuss the importance of business plan in commercial livestock production. • prepare a budget for	classify livestock into ruminants and non – ruminants. state uses of each type of livestock. identify breeds of each type of livestock. draw a budget for inputs used in commercial livestock production. prepare a shopping list of inputs used in commercial livestock production state management practices for each type of livestock.	Types of livestock. Charts. School farm. Feeds. Catalogue. Order book.

	Values and Attitudes Appreciation Awareness Cooperation	inputs used in commercial livestock production. • prepare a shopping list for inputs used in commercial livestock production. • discuss other special management practices of dairy cows (milking and milking parlour), beef (handling bulls, inserting a ring on the nose), and feeding of dairy and beef animal, sheep and goats (shearing of wool and mohair and their classification). • discuss feeding of dairy, beef and pigs at different stages of growth and production. • undertake an educational trip to a nearby livestock farm	name products and by – products of each type of livestock. give uses of products and by – products of each type of livestock. state other special management practices of dairy cows (milking and milking parlour), beef (handling bulls, inserting a ring on the nose) and feeding of dairy and beef animals and shearing of wool and mohair and their classification. state feeding of commercial livestock at different stages of growth and production. state ways of processing products and by – products of each type of livestock.	

		to observe commercial livestock production. **Learners:** • identify products and by - products from different types of livestock. • discuss uses of products and by-products from each type of livestock. **Teacher and learners:** • discuss ways of processing products and by – products for each type of livestock. • identify marketing strategies of products and by – products of each type of livestock. • keep at least one type of livestock, process the products and by –	name marketing strategies of products and by – products of each type of livestock. keep and manage each type of livestock. carry out a project to process milk.	

		products and market them.		

At the end of Grade 9, learners should be able to:	Concepts, skills, values and attitudes	Suggested learning experiences	What to assess: teacher assesses learner's ability to:	Suggested resources
9. describe range management principles and practices.	**Concepts** **Terms used in range management:** carrying capacity; and stocking rate. **Range management systems:** **Intensive grazing:** ○ paddock; ○ zero grazing; ○ rotational grazing; and ○ strip grazing. **Extensive grazing:** communal grazing.	**Teacher and learners revise:** • range management. • composition of rangeland. • improvement of pasture. **Teacher and learners:** • discuss terms used in range management. • calculate stocking rate and carrying capacity. • differentiate range management systems.	describe terms used in range management. calculate stocking rate and carrying capacity. differentiate range management systems. classify examples of intensive and extensive grazing systems. outline advantages and disadvantages of intensive and extensive grazing systems.	Resource person. Environment. Internet. Library. Posters. Charts.

	Advantages and disadvantages of grazing systems. **Skills** Observation Comparison Identification Problem solving Decision making Evaluation Calculations **Values and Attitudes** Awareness Appreciation Caring Responsibility	• discuss advantages and disadvantages of intensive and extensive grazing systems. **Teacher:** • invites resource person to discussrange management principles and practices. • organises field trip.	report on a field trip.	

At the end of Grade 9, learners should be able to:	Concepts, skills, values and attitudes	Suggested learning experiences	What to assess: teacher assesses learner's ability to:	Suggested resources
10. describe use of farm tools and implements.	**Concepts** **Farm tools:** plier; saw; hammer; screw driver; file; spanner; dozing gun; and burdizzo. **Farm Implements:** sprayer; and baler. Budgeting. **Skills** Comparison Observation	**Teacher and learners:** • discuss the use of farm tools and implements. • prepare a budget for farm tools and implements. • prepare a shopping list for farm tools and implements. • Teacher demonstrates the use of farm tools and implements. **Learners:** • dismantle and reassemble parts of a sprayer. • practice use of farm tools and implements.	differentiate farm tools and implements. draw a budget for farm tools and implements. prepare a shopping list of farm tools and implements. outline uses of farm tools. outline use of implements. identify the parts of a sprayer. practice use of farm tools. practice use of implements.	Charts. Library. Internet. Tools and implements. Catalogue. Order book.

	Reporting Identification Manipulation Workmanship Problem – solving Decision - making **Values and Attitudes** Appreciation Awareness Cooperation	• Teacher and learners take a field trip to a farm to observe the use of farm tools and implements.		

At the end of Grade 9, learners should be able to:	Concepts, skills, values and attitudes	Suggested learning experiences	What to assess: teacher assesses learner's ability to:	Suggested resources
11. describe livestock anatomy and physiology.	**Concepts** **Digestive systems:** ruminant; non-ruminant; and bird. **Skills** Identification Comparison	• Teacher describes the structures and functions of digestive systems of ruminant, non-ruminant and a bird. **Learners:** • draw the digestive	name the parts of the digestive systems of a ruminant. state the parts of the digestive systems of a non-ruminant. give the parts of the digestive systems of a bird.	Charts. Internet. Bird. Library. Ruminant and

	Experimentation Observation Reporting Drawing Co-operation Manipulation **Values and Attitude** Appreciation Awareness Patience	systems of ruminant, non-ruminant and a bird. • compare the digestive systems of ruminant, non – ruminant and a bird. • slaughter an animal or a bird to identify the digestive system. **Teacher and learners:** • discuss the processes of digestion and absorption in the alimentary canals of a ruminant, a non-ruminant and a bird. • Teacher invites a resource person.	state the functions of the parts of the digestives systems differentiate between the digestive systems of ruminant, non-ruminant and bird. describe the processes of digestion and absorption in a ruminant, non-ruminant and a bird.	non – ruminant.

At the end of Grade 9, learners should be able to:	Concepts, skills, values and attitudes	Suggested learning experiences	What to assess: teacher assesses learner's ability to:	Suggested resources
12. describe management of poultry.	**Concepts** Types of poultry: layers broilers dual purpose Poultry management: rearing feeding **Skills** Observation Drawing Manipulation Reporting Problem – solving Decision – making Comparison **Values and Attitudes**	• Teacher and learners revise the importance of rearing poultry. **Teacher:** • defines terms: poultry, pullets, prolapse, litter, cannibalism, egg-pecking, feather – pecking and debeaking. • identifies breeds of layers. • identifies breeds of broilers. **Teacher and learners:** • discuss types of poultry. • identify different systems of keeping poultry. • discuss advantages and	list types of poultry. define terms used in poultry. identify breeds of both layers and broilers. describe different systems of keeping poultry. state advantages and disadvantages of each system. identify types of feeds for both broilers and layers. draw and label the external parts of a chicken. differentiate between a laying	Chicks. Pullets. Chicken. Charts. Protective clothing. Teachers' Guide. Feeds. Slaughtering kit.

	Awareness Acceptance Appreciation Care Responsibility	disadvantages of each system. • discuss types of feeds for layers and broilers. • discuss external parts of a chicken. • discuss the difference between a laying hen and a non-laying hen. • take a field trip to a nearby poultry farm. **Teacher:** •describe management practices. • Demonstrates slaughtering of a chicken. **Learners:** • draw and label external parts of a chicken. • practice slaughtering of chicken.	and a non- laying hen. carry out a poultry project. practice slaughtering procedure of a chicken. record observations and report about the trip.	

		• carry out poultry project in the school.		