



Republic of Namibia

MINISTRY OF EDUCATION

JUNIOR SECONDARY PHASE

AGRICULTURE SYLLABUS

GRADES 8 - 10

FOR IMPLEMENTATION IN 2010

Ministry of Education
National Institute for Educational Development (NIED)
Private Bag 2034
Okahandja
Namibia

© Copyright NIED, Ministry of Education, 2010
Agriculture Syllabus Grades 8 - 10

(This document is also available on the NIED webpage: <http://www.nied.edu.na>.)

ISBN: 0-86976-839-5

Printed by NIED

Publication date: January 2010

TABLE OF CONTENTS

1. INTRODUCTION.....	1
2. RATIONALE AND AIMS.....	1
2.1 Knowledge with Understanding.....	1
2.2 Values and Attitudes	1
2.3 Scientific Skills	2
2.4 Democratic Principles	2
3. COMPETENCIES AND LEARNING OUTCOMES.....	2
3.1 Competencies	2
3.2 Learning Outcomes	2
4. PARTICULAR FEATURES OF THE SUBJECT AT THIS PHASE	2
5. GENDER ISSUES.....	3
6. LOCAL CONTEXT AND CONTENT	3
7. LINKS TO OTHER SUBJECTS AND CROSS-CURRICULAR ISSUES.....	3
8. APPROACH TO TEACHING AND LEARNING.....	5
9. SUMMARY OF LEARNING CONTENT	5
10. DETAILED LEARNING CONTENTS	7
GRADE 8.....	7
GRADE 9.....	16
GRADE 10.....	28
11. ASSESSMENT	46
12. ADDITIONAL INFORMATION.....	53
A1: Glossary of Terms Used in Science Teaching and Assessment Activities:.....	53
A2: Assessment Record Sheet for Grades 8 to 10, Terms 1 and 2	54
A3: Assessment Record Sheet for Grades 8 & 9, Term 3.....	55

1. INTRODUCTION

The revised syllabi for Agriculture Grades 8 - 10 have been developed in such a way that they describe the intended learning outcomes and assessment practices for the Junior Secondary Phase within the science mainstream. The learning experiences and subsequent outcomes in the natural science subjects are tailored towards promoting the learners' knowledge and understanding of the economic, social, physical and biological world of which they are a part. The Agriculture syllabi for Junior Secondary Education therefore integrate natural science, social, economic, physical, mathematical and technological learning areas of the broad curriculum.

Furthermore, the Agriculture syllabi were developed in a clear and simple style in order to convey the ethos of learner-centred education. Learner-centred education presupposes that teachers have a holistic view of the learner, valuing the learner's life experience as the focal point of learning and teaching. Teachers should therefore select learning content and methods on the basis of the learners' needs within their immediate environment and community.

The themes and topics in the Agriculture curriculum embrace content matter in all other subjects across the curriculum. Under ideal conditions, the Agriculture syllabi for Grades 8 - 10 would require 4 periods per week, with at least one double period.

2. RATIONALE AND AIMS

Learning experiences in the natural science area are focused upon promoting teaching and learning for understanding. Namibia, like most African countries, is rich in natural resources. The exploration of these resources requires scientific knowledge and relevant skills, such as entrepreneurship. The acquisition of scientific knowledge and entrepreneurship skills presents itself as a prerequisite for a progressive national economy and improved standard of life for our people as envisaged in the country's long term strategic plan of Vision 2030. Thus it is important for our learners to acquire knowledge and skills which will foster their understanding of the interaction of human being and the environment in order to satisfy human needs. It must be understood that the physical and biological world around us is quite complex and therefore needs to be understood in a holistic manner by the society in order to sustain the natural resources.

The sustainability of our natural resources, however, requires advanced technology through the efficient and effective usage of equipment, materials and processes. Modern technology is required in order to assist our learners and society to solve problems through planning, design, realisation, and evaluation of activities and goals.

The main aim of the Agriculture syllabi in the natural science area is therefore to provide essential scientific background for our learners with the hope of producing the much-needed scientists and agriculturalists for the country. The Namibian society needs to be scientifically literate if it is to cope with challenges of appropriate global technology and other economic requirements. This scientific knowledge and approach are also major challenges for the agricultural sector and agricultural education in particular.

The subject Agriculture within the natural science area promotes the following aims in the curriculum guide based on relevant skills:

2.1 Knowledge with Understanding

- develop knowledge, understanding, creativity, practical and experimental skills as a solid foundation for academic training to prepare learners for creative and meaningful adult life
- help learners develop self-confidence, self-knowledge and understanding of the world in which they live, through meaningful scientific agricultural activities

2.2 Values and Attitudes

- develop a sense of responsibility towards the environment, relating scientific agricultural practices to sustainable use of natural resources
- demonstrate desirable behavioural patterns and frame of mind in interacting with the environment in a manner that is protective, preserving and nurturing
- develop attitudes and practices, further knowledge and activities that promote the physical and mental health of the society
- develop economic values and practice for the purpose of uplifting the standard of living in our society

2.3 Scientific Skills

- develop a lively, questioning, appreciative and creative intellect to enable learners to discuss issues rationally, to make careful observations and analysis, to think scientifically, to solve problems and apply these skills to tasks
- promote Information Communication Technology (ICT) as a tool to enhance understanding of the agricultural learning content and practice

2.4 Democratic Principles

- promote opportunity for gender equality, enabling both sexes to participate equally and fully in all spheres of society and fields of employment in the agricultural sector
- lay a foundation for informed and responsible attitudes and choices towards the balance of population growth, ecological sustainability, and the quality of life for all citizens of Namibia

3. COMPETENCIES AND LEARNING OUTCOMES

3.1 Competencies

Basic Competencies are the basic cognitive operations, skills and attitudes and values that all learners in Namibian schools are expected to demonstrate, and which can be assessed. The Basic Competencies specified in the natural science subjects are intended to help teachers identify the normal progress and all-round development of the learners at each stage. The expectation from the Ministry is that most learners in the Junior Secondary Phase will achieve the Basic Competencies, some very well or exceptionally well, and will progress from one grade to the next. Learners who partly achieve the Basic Competencies will also be able to progress to the next year with compensatory teaching.

It is important to know that entry into Junior Secondary education will depend on the learner's performance in the summative assessment at the end of Upper Primary Education. Likewise, promotion through grades 8-10 will depend on the performance of learners from one grade to another as per criteria stipulated on page 37 of the Pilot Curriculum for Formal Basic Education of 1996.

3.2 Learning Outcomes

On completing Grade 7, learners in the Natural Science stream should be in a position to discover and develop their potential and interests in essential science that prepares them for varied aspects of life. They should possess the necessary skills in the scientific area of learning as tools to understand the scientific principles embedded in their natural environment. The skills include the following:

- **Communication Skills:** the ability to communicate fluently by being able to tell, act out, draw, write, explain, show, discuss, display, report and dramatise
- **Information Skills:** recognition that information becomes accessible in various forms and learners need to develop higher cognitive skills of analysis, interpretation and evaluation to use information effectively
- **Self-Management and Competitive Skills:** learners develop self-confidence, self-reliance and understanding of the world in which they live through meaningful agricultural activities
- **Problem Solving Skills:** the ability to think critically in solving problems and apply these skills to tasks
- **Participation:** taking part in learning activities by relating to others and taking responsibility for one's actions
- **Physical Skills:** the ability to use appropriate techniques and to handle apparatus/ material competently with due regard for safety; these skills are essential for most subject areas including Agriculture as they are concerned with the development of the psychomotor skills which are fundamental for the learner's daily life
- **Entrepreneurship Skills:** equip learners to play an effective and productive role in the economic life of the nation

4. PARTICULAR FEATURES OF THE SUBJECT AT THIS PHASE

The subject Agriculture within the natural science area places more emphasis on the learners' understanding of the physical and biological world around them at the local, regional and international level. It thus includes how society uses natural resources to satisfy its needs, and how the environment may be changed in ecologically sustainable ways. At this phase and subject area the application of scientific knowledge and attitudes to health is of special relevance for the individual, the family, and society as a whole.

5. GENDER ISSUES

Including gender perspectives is important for the Agriculture curriculum in order to raise awareness of gender stereotyping and the promotion of gender equity in all spheres of life. In all activities carried out within the natural science area of study, female learners should experience the confidence which will motivate them to continue in the Natural Science stream throughout their school career and beyond, particularly in the field of Agriculture.

6. LOCAL CONTEXT AND CONTENT

The learning content in this syllabus is based on the Namibian context, although the themes and topics are on a variety of scales to meet international standard. Teachers are therefore urged where appropriate to use local examples to illustrate Agricultural issues, concepts and processes.

7. LINKS TO OTHER SUBJECTS AND CROSS-CURRICULAR ISSUES

The cross-curricular issues including Environmental Learning, HIV and AIDS, Population Education, Education for Human Rights and Democracy (EHRD) and Information and Communication Technology (ICT) have been introduced to the formal curriculum to be dealt with in each subject and across all phases because each issue deals with particular risks and challenges in our Namibian society. All of our learners need to:

- understand the nature of these risks and challenges;
- know how they will impact our society and the quality of life of our people now and in the future;
- understand how these risks and challenges can be addressed on a national and global level;
- understand how each learner can play a part in addressing these risks and challenges in their own school and local community.

The main risks and challenges have been identified as:

- the challenges and risks we face if we do not care for and manage our natural resources;
- the challenges and risks caused by HIV and AIDS;
- the challenges and risks to health caused by pollution, poor sanitation and waste;
- the challenges and risks to democracy and social stability caused by inequity and governance that ignores rights and responsibilities;
- the challenges and risks we face from globalization;
- challenges we face as a result of emerging high technology amid scarcity of resources in schools and communities.

Even though some subjects are more suitable to address specific cross-curricular issues, all risks and challenges as identified above will be addressed in this syllabus.

Links in this syllabus to cross-curricular issues:

Cross-Curricular Issues	Grade 8	Grade 9	Grade 10
Environmental Education	1.4 Application of conservation farming for sustainable agricultural production	1.1 Importance of sustainable agriculture for the local community 1.3 Environmental factors and plant growth	1.1 Importance of sustainable agriculture for the nation 1.2 Environmental influences on plant growth 1.3 Soil and water conservation 3.3 Community based natural resources management (conservancies)
HIV and AIDS			1.6 The impact of HIV and AIDS on population growth and the resultant food security
Population Education	1.1 The history of Agriculture: population increase resulting in movement of people in search of more land		1.5 Population growth and Agriculture
Human Rights and Democracy	1.5 Rights and condition of service of farm workers	1.4 Gender roles in Agriculture	
Information and Communication Technology	Theme 4: Agricultural Technology record keeping of farming activities using record cards and computers (where applicable) accessing information on various agricultural activates in Namibia using the internet (where applicable)	Theme 4: Agricultural Technology record keeping of farming activities using record cards and computers (where applicable) accessing information on various agricultural activates in Namibia using the internet (where applicable)	Theme 4: Agricultural Technology record keeping of farming activities using record cards and computers (where applicable) accessing information on various agricultural activates in Namibia using the internet (where applicable)
Entrepreneurship	All themes applying skills on harvesting, processing and marketing of various agricultural commodities /products to generate income	All themes applying skills on harvesting, processing and marketing of various agricultural commodities /products to generate income	All themes applying skills on harvesting, processing and marketing of various agricultural commodities /products to generate income

8. APPROACH TO TEACHING AND LEARNING

The approach to teaching and learning in the science mainstream is based on a paradigm of learner-centred education as described in the Ministry's policy documents, including curriculum guides and a conceptual framework of syllabus revision. This approach ensures optimal quality of learning when the following principles are put into practice.

The aim is to develop learning with understanding, including the skills and attitudes required to contribute to the development of society. The focal point for teaching and learning is based on the principle which states that learners bring to the school a wealth of knowledge and social experiences gained continually from the family, the community and through interactions with the environment. Learning at school must involve, build on, extend and challenge the learner's prior knowledge and experiences.

Learners learn best when they are actively involved in the learning process through a high degree of participation, contribution and production. At the same time, each learner is an individual with her/his needs, pace of learning, experience and abilities. The teacher must be able to explore the needs of learners, the nature of learning to be done, and how to shape learning experiences accordingly. Teaching strategies must therefore be varied but flexible within well-structured sequences of lessons.

The teacher must decide, in relation to the learning objectives and competencies to be achieved, when it is best to convey content directly and when it is best to let learners discover or explore information themselves. The teacher should also decide when learners need directed learning, and when they need reinforcement or enrichment learning. She/he must furthermore decide when there is a particular progression of skills or information that needs to be followed or when learners can be allowed to find their own way through a topic or area of content.

Working in groups, in pairs, individually or as a whole class must therefore be organised as appropriate to the task in hand. Co-operative and collaborative learning should be encouraged wherever possible. In such cases, tasks must be designed so that pair or group work is needed to complete it, otherwise learners will not see any relevance in carrying out tasks together. As learners develop personal, scientific and communication skills, they can be gradually given increasing responsibility to participate in planning and evaluating their work, under the teacher's guidance.

9. SUMMARY OF LEARNING CONTENT

This syllabus consists of four main themes: General Agriculture, Plant Production, Animal Production and Farm Technology. However, the themes should not be seen as separate components and topics should be taught across all four themes. In addition, teachers should realize that there are certain aspects of the syllabus that should not be taught as separate entities and at fixed times during the school year. These include incidental topics and issues such as general knowledge, field trips, project work, investigations and observations and social events.

Summary of Learning Content for Grades 8-10 Agriculture

Grade 8	Grade 9	Grade 10
1. General Agriculture 1.1 History of Agriculture	1. General Agriculture 1.1 Importance of Agriculture to the local community	1. General Agriculture 1.1 Importance of Agriculture to the national economy
2. Plant Production 2.1 General aspects 2.2 Fruit production	2. Plant Production 2.1 General Aspects 2.2 Cash crops 2.3 Fodder productions	2. Plant Production 2.1 Soils 2.2 Tree growing OR 2.3 Cereal crops (maize /millet) 2.4 Grazing and veld management
3. Animal Production 3.1 General aspects 3.2 Poultry farming 3.2 Pig farming	3. Animal Production 3.1 General aspects 3.2 Fish farming (aquaculture) 3.3 Dairy farming	3. Animal Production 3.1 General aspects 3.2 Community based resource management (conservancies) 3.3 Ostrich Farming OR 3.4 Beef Farming
4. Farm Tools and Implements 4.1 Use of farm tools and implements	4. Farming Technology 4.1 Farm buildings	4. Farming Technology 4.1 Water installations

10. DETAILED LEARNING CONTENTS

GRADE 8

THEME 1: GENERAL AGRICULTURE

<p>Examples of suggested activities for the theme and subsequent topics:</p>	<ul style="list-style-type: none"> • write down the names and occupations of about ten family members within your local area, indicating who among them relies directly or indirectly on agriculture for their income and livelihood • collect pictures/labels/samples and make posters showing food and clothing people get from crops and animals • visit local shops and identify at least six products imported into Namibia, find out why these commodities are not produced and processed in Namibia • draw a map of a farm (school farm or any other) and show plans of the layout of each division 	
TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
1.1 History of Agriculture	<p>understand the historical background of agriculture in terms of animal herding, the nomadic way of life, food gathering and hunting</p>	<ul style="list-style-type: none"> • outline the historical progression of farming practices • explain what is meant by a nomadic way of life, animal herding, food gathering and hunting • suggest reasons why people moved from one place to another in the past
1.2 The farm as a production unit	<p>understand the value of the farm as a production unit</p>	<ul style="list-style-type: none"> • visit nearby agricultural enterprises and identify their products • identify different implements found and used on the farm such as hand and workshop tools, ploughs, harrows, planters, fertilizer spreaders, harvesting machines, milking machines, sprayers and feeding instruments • identify the divisions on the farm: farmyard, dry land, irrigated land, pastures, gardens and orchards • describe how various divisions of the farm provide different sources of food and income
1.3 Farming systems in Namibia	<p>understand the value of various farming systems and their socio-economic impact in Namibia</p>	<ul style="list-style-type: none"> • discuss the significance of subsistence farming to the Namibian society and how it can be improved to generate more income • describe commercial, subsistence, and homestead farming, using examples of each system • discuss the advantages and disadvantages of each system

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
1.4 Application of conservation farming for sustainable agricultural production	acquire knowledge and skills in the management and caring of the environment and our natural resources through the practice of conservation farming in agriculture	<ul style="list-style-type: none"> • outline the aims of conservation farming practices in Namibia • discuss the limitation of natural resources, e.g. land and water, in our country • identify negative effects of soil erosion on farming • suggest methods of preventing erosion by filling dongas and building contour walls • describe the fragile nature of our ecosystem and how it can be damaged by injudicious (careless) agricultural practices • draw up programmes on how to save water and other natural resources
1.5 Condition of service of farm workers	understand the requirements of the labour act on the living conditions of the farm workers	<ul style="list-style-type: none"> • analyze the legislation (laws) related to labour relations and condition of service of farm workers • investigate the condition of farm workers in relation to the provision of basic necessities to all workers within the agricultural sector • discuss the need for the prevention of forced and child labour in the agricultural sector

THEME 2: PLANT PRODUCTION

<p>Examples of suggested activities for the theme and subsequent topics:</p>	<ul style="list-style-type: none"> • conduct an experiment to demonstrate plant processes such as photosynthesis, respiration and transpiration • collect and classify different types of fruits such as citrus, deciduous, tropical or subtropical • design the layout of an orchard or nursery • prepare seedbeds and plant fruit trees • conduct a germination test of seeds for different fruit trees • identify and use tools for the planting and pruning of fruit trees 	
<p>TOPIC</p>	<p>LEARNING OBJECTIVES Learners will:</p>	<p>BASIC COMPETENCIES Learners should be able to:</p>
<p>2.1 General Aspects</p>		
<p>2.1.1 The structure of the plant</p>	<p>understand the main structures and functions of different parts of the plant</p>	<ul style="list-style-type: none"> • identify the structures of a plant: root system, stem, buds and leaves, flowers, seeds and fruits • draw a simple diagram of a plant showing each structure • state the functions of different parts of the plant
<p>2.1.2 Plant processes</p>	<p>acquire knowledge of various plant processes and their importance to the plant growth and survival</p>	<ul style="list-style-type: none"> • describe the following processes and explain their importance: photosynthesis, respiration, transpiration, translocation • explain each process by means of a diagram
<p>2.1.3 Reproduction</p>	<p>understand the different reproductive systems of a plant</p>	<ul style="list-style-type: none"> • explain the reproduction processes of plants • explain the difference between sexual and asexual reproduction • identify methods of asexual reproduction, e.g. roots, bulbs, tubers, stems and leaves • describe the processes of pollination and fertilization in sexual reproduction
<p>2.2 Fruit Production</p>		
<p>2.2.1 The importance of fruits</p>	<p>understand that fruits are important to human beings</p>	<ul style="list-style-type: none"> • identify different types of fruits produced in Namibia and Southern Africa • collect and classify different types of fruits, such as citrus, tropical, subtropical, or deciduous • explain the importance of fruits to humans and the economy

2.2.2 Growing of fruit trees (Only one of the following types of fruit should be covered: citrus, tropical, subtropical, or deciduous)	acquire knowledge of the methods of planting fruit trees	<ul style="list-style-type: none"> describe methods of propagating fruit trees such as citrus, tropical, subtropical, or deciduous
2.2.3 Soil and climatic requirements	understand the soil and climatic requirements for propagating a selected fruit tree	<ul style="list-style-type: none"> investigate favourable conditions required for growing a chosen fruit tree compare the local conditions with those required by a chosen crop explain the optimal (ideal) soil and climatic conditions for the production of the chosen fruit tree
2.2.4 Soil preparation	acquire knowledge and skills on the preparation of the soil for growing selected fruit trees	<ul style="list-style-type: none"> explain the reasons why there is a need for good soil preparation describe the procedure to be followed in preparing the soil for planting fruit trees suggest a suitable area for planting a selected fruit tree identify tools and equipment needed in growing fruit trees, e.g. spade, hoe, fork, pick, rake, watering cane, hose pipe, pruning shears, machete, wheel burrow, and sprayer
2.2.5 Planting by seeds and seedlings/cuttings	gain the skills needed in the planting of seeds and seedlings/cuttings	<ul style="list-style-type: none"> explain the importance of good quality seeds and seedlings describe the correct methods of planting trees collect seeds and seedlings and plant them following correct planting techniques indicate the correct depth, time and spacing of seeds and seedlings
2.2.6 Management of fruit trees	understand the importance of good management of fruit trees	<ul style="list-style-type: none"> discuss the importance of safekeeping of seeds and seedlings explain the importance of record keeping in tree planting, e.g. tree name, planting date, yield, problems and remarks apply fertilizers (inorganic or organic) and water the fruit trees regularly demonstrate the correct way of pruning trees describe and practice ways of controlling pests, diseases and weeds specify the correct time and methods of harvesting and marketing fruits

THEME 3: ANIMAL PRODUCTION

<p>Examples of suggested activities for the theme and subsequent topics:</p>	<ul style="list-style-type: none"> • visit a nearby farm and observe different species and breeds of available farm animals; discuss with the farmer the different methods of caring for these animals • collect and distinguish the different kinds of endo-parasites and ecto-parasites; discuss their harmful effects on animals, their prevention and their control • demonstrate the use of equipment for controlling diseases and pests in poultry • demonstrate the slaughtering and dressing of chickens (poultry) • observe the following practices: finishing off for the market, weighing animals, slaughtering, grading and cutting carcasses 	
TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
3.1 General Aspects		
3.1.1 Species of farm animals	acquire knowledge on various types of farm animals	<ul style="list-style-type: none"> • explain reasons why specific animals are kept on the farm/homestead • identify different types of farm animals and their purpose: <ul style="list-style-type: none"> - cattle: dairy, beef, dual purpose - sheep: wool, mutton, pelts, dual purpose - pigs: pork - goats: milk, meat , mohair - poultry: layers, broilers, dual purpose - horses, donkeys, mules: labour -ostriches: skin, feathers, eggs, ornaments
3.1.2 Animal health	acquire knowledge of the need to keep farm animals in healthy state	<ul style="list-style-type: none"> • identify and explain signs of healthy and unhealthy animals • describe the most important ways of prevention, control and cure of animal diseases, including parasites, through: injection, vaccination, dosing, dipping, and cleaning of animal units

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
3.1.3 Animal nutrition	understand the significance of animal feeding programs	<ul style="list-style-type: none"> distinguish between different types of animal feed and give examples of the different types describe ways of feeding farm animals explain what is meant by a balanced diet name the sources and explain the functions of each of the following nutrients in the animal's body: water, minerals, proteins, vitamins, carbohydrates and fats list some deficiency diseases found in animals
3.1.4 Breeding and selection	understand the importance of animal breeding and selection	<ul style="list-style-type: none"> explain what is meant by animal breeding and selection and the purpose of each select suitable animals for breeding from a group of animals
3.2 Poultry Farming		
3.2.1 Breeds	acquire knowledge of the most important breeds of poultry	<ul style="list-style-type: none"> identify most suitable breeds of chickens available in Namibia and Southern Africa explain the value of keeping different breeds for egg production, meat production and dual purposes
3.2.2 Hatching eggs and raising chicks	understand how eggs are hatched and ways of raising chickens	<ul style="list-style-type: none"> identify producing and non-producing hens outline the requirements for hatching eggs and check eggs for fertility distinguish between artificial and natural incubation cull and slaughter non-producing hens provide favourable conditions for hatching eggs specify the requirements suitable for raising chicks in the brooder design production and feeding records
3.2.3 Disease and pests	acquire knowledge about diseases and pests affecting poultry	<ul style="list-style-type: none"> name the common diseases and pests affecting poultry explain how to control diseases and pests using different equipment such as sprayers, syringes and needles

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
3.2.4 Marketing poultry	understand the importance of proper entrepreneurial skills in marketing poultry	<ul style="list-style-type: none"> • identify different stages of marketing poultry • explain how and where to market poultry • compare the inputs and outputs in terms in terms of costs and expenditures
3.3 Pig Farming		
3.3.1 Breeds	acquire knowledge of different breeds of pigs found in Namibia and Southern Africa	<ul style="list-style-type: none"> • identify the most important indigenous and exotic breeds of pigs such as large white, large black, SA land race and others by visiting farms, collecting pictures, slides and photos • describe the characteristics of one breed suitable for the learners' area • distinguish between good and poor characteristics of pigs
3.3.2 Production	understand the purpose of keeping a particular breed e.g. for bacon, pork and sausage production	<ul style="list-style-type: none"> • explain the purpose of keeping the specific breeds of pigs • describe and observe the following: finishing off for the market, weighing, slaughtering, grading and cutting carcasses
3.3.3 Handling of pigs	know the techniques and methods of handling pigs	<ul style="list-style-type: none"> • state reasons for marking, dosing, immunizing, castrating, teeth clipping and regular inspection of pigs
3.3.4 Animal Health	gain knowledge of the common diseases and parasites affecting the chosen breed in their area	<ul style="list-style-type: none"> • identify diseases according to symptoms • describe how to prevent and control diseases and parasites affecting pigs • discuss the role of veterinary services in animal health

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
3.3.5 Feeding	gain knowledge of the feeds required by pigs at different stages	<ul style="list-style-type: none"> • outline feeds required at different stages as follows: <ul style="list-style-type: none"> - dry sows → mash - gestation → mash - lactating sows → green feed + winner meal - bacon → creep + growing mash - fattening → finisher + meal fattener - boars → dry meal • describe and explain the importance and functions of the different components of a balanced diet, including water
3.3.6 Marketing	apply knowledge and skills related to the marketing of their animals and products	<ul style="list-style-type: none"> • explain the procedures to be followed in marketing pigs and pig products • investigate and suggest how and where to market their pigs and pig products

THEME 4: FARM TOOLS AND IMPLEMENTS

<p>Examples of suggested activities for the theme and subsequent topics:</p>	<ul style="list-style-type: none"> • perform simple maintenance of farm tools and implements • use tools to maintain cages, pens, and nest-boxes in clean and tidy conditions • construct low cost tools using locally available materials 	
<p>TOPIC</p>	<p>LEARNING OBJECTIVES Learners will:</p>	<p>BASIC COMPETENCIES Learners should be able to:</p>
<p>4.1 Use of farm tools and implements</p>	<p>develop skills related to the use of farm tools and implements</p>	<ul style="list-style-type: none"> • identify tools used on the farm including garden tools, woodworking tools, metal tools, and the basic tools used for fencing, mechanics and water installations • identify implements used on the farm such ploughs, harvesters, harrows, tractors and trailers • describe the use and maintenance of the following tools and implements used on the farm: <ul style="list-style-type: none"> - tools: hoe, spade, garden fork, rake, wheel barrow, pliers, strainer - implements: ploughs and harrows • describe the use of ropes to secure loads, including methods of using light knots

GRADE 9

THEME 1: GENERAL AGRICULTURE

<p>Examples of suggested activities for the theme and subsequent topics:</p>	<ul style="list-style-type: none"> • write down the names and occupations of about ten family members within your local area, indicating who among them relies directly or indirectly on agriculture for their income and livelihood • investigate the effect of wind on plants by conducting a simple experiment: place two identical well-watered pot plants, one in the room and another in front of the fan and then observe and record the outcome of each • conduct a simple experiment to investigate the effect of temperature on evaporation 	
<p>TOPIC</p>	<p>LEARNING OBJECTIVES Learners will:</p>	<p>BASIC COMPETENCIES Learners should be able to:</p>
<p>1.1 The importance of sustainable agriculture</p>	<p>understand the value of agriculture to society</p>	<ul style="list-style-type: none"> • explain the contribution of agriculture to the family and region • discuss ways in which farmers can practice agriculture in a sustainable manner • list ways in which crops and animals provide food, clothing and other commodities to people
<p>1.2 Grazing systems</p>	<p>develop a clear understanding of different grazing systems</p>	<ul style="list-style-type: none"> • distinguish between different grazing systems, such as intensive, extensive and rotational grazing • describe the advantages and disadvantages of different grazing systems
<p>1.3 Environmental factors and plant growth</p>	<p>understand the environmental factors influencing plant growth</p>	<ul style="list-style-type: none"> • identify the environmental factors influencing plant growth, e.g. wind, temperature, humidity and rainfall • provide explanations why some areas in Namibia receive more rain than others
<p>1.4 Gender roles in agriculture</p>	<p>understand the role of gender in the social and leadership structures within the agricultural sector</p>	<ul style="list-style-type: none"> • investigate the role of gender in the social and leadership structure within the agricultural sector and deduce how this situation can be improved

THEME 2: PLANT PRODUCTION

<p>Examples of suggested activities for the theme and subsequent topics:</p>	<ul style="list-style-type: none"> • collect and identify different types of available rocks • visit surrounding areas of the school and observe signs of weathering processes where applicable • dig a hole and identify and discuss various horizons of the soil profile in terms of topsoil, subsoil and underlying materials • conduct a simple experiment to determine the texture of the soil in your school garden • sow or plant seeds/cuttings of different cash crops according to the required time of season, depth and space • conduct an experiment to determine the viability of seeds • design a poster displaying different products of cash crops 	
TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
2.1 General Aspects		
2.1.1 Types of rocks	gain insight into the formation of different types of rocks	<ul style="list-style-type: none"> • describe how different types of rocks are formed • compare the formation of different types of rocks, such as igneous, sedimentary and metamorphic
2.1.2 Soil formation	understand the formation of soil through the process of weathering	<ul style="list-style-type: none"> • categorize the types and agents of weathering • explain what is meant by weathering • describe how soil is formed through the process of weathering
2.1.3 Types of soil	acquire knowledge of different types of soil	<ul style="list-style-type: none"> • determine the size of soil particles in terms of sand, loam and clay, by means of an experiment • describe the characteristics of different types of soil such as sand, loam and clay
2.1.4 Soil profile	understand the layout and composition of a simple soil profile	<ul style="list-style-type: none"> • describe the main features of different horizons of the soil profile • dig a hole and identify and discuss various horizons of the soil profile in terms of topsoil, subsoil and underlying materials

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
2.1.5 Plant structure	understand the main structures of plants	<ul style="list-style-type: none"> • identify the different structures of a plant • illustrate, by means of a diagram, how roots absorb minerals from the soil • describe the use of nitrogen, phosphorous and potassium by different parts of the plant
2.2 Cash Crops <i>(choose one of the following cash crops suitable for the local area: tobacco, cotton, sugarcane, wheat or sunflower)</i>		
2.2.1 Importance of a chosen crop	generate ideas about the importance of a chosen crop as a source of income	<ul style="list-style-type: none"> • collect pictures and samples of the cash crops produced in Namibia and identify their by-products • describe how the raw materials from cash crops can be processed • describe the importance of a chosen crop to the economy of the country
2.2.2 Cultivars	realize that there are different cultivars for any particular crop	<ul style="list-style-type: none"> • explain what is meant by a cultivar • collect and identify different cultivars for a particular crop • explain the necessity of choosing the right cultivar for the local conditions
2.2.3 Soil and climatic requirements	understand the optimal soil and climatic requirements needed for better production of particular crops	<ul style="list-style-type: none"> • analyze and describe the soil and climatic requirements of a chosen crop • compare the local soil conditions with conditions required by a chosen crop • compare and contrast the advantages and disadvantages of rainfall and irrigation for the chosen crop • explain what is meant by irrigation and its necessity for plant growth • suggest and defend the best irrigation method for a chosen crop

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
2.2.4 Preparation of soil for planting	apply knowledge and skills to the preparation of soil for planting purposes	<ul style="list-style-type: none"> • explain the importance of preparing the soil before planting a particular crop • state reasons why different fertilizers should be applied in the right way, right amount and at the right time • demonstrate how to prepare the soil for planting a particular cash crop: cleaning the area, determining the soil pH, measuring the plot, digging, leveling, fertilizing
2.2.5 Planting cash crops	understand the importance and use of using quality seeds /planting materials and the best planting method	<ul style="list-style-type: none"> • carry out an experiment to test the viability of the seeds • describe the best methods of planting a chosen cash crop • plant seeds/cuttings according to the required time in the season, depth and spacing
2.2.6 Taking care of cash crops		
2.2.6.1 Record keeping	understand the importance of keeping records	<ul style="list-style-type: none"> • explain the value of record keeping in crop production • design and keep records of all activities and data by using record cards or computers, where applicable
2.2.6.2 Fertilizing	understand the effects of fertilizers	<ul style="list-style-type: none"> • identify different sources of plant nutrients <ul style="list-style-type: none"> - organic (compost, grass, and manure) - inorganic fertilizers (lime, NPK) • apply fertilizers in the right way, the correct amount and at the proper time • discuss the advantages and disadvantages of inorganic fertilizers
2.2.6.3 Pests, diseases and weed control	gain insight into the negative effects of pests, diseases and weeds for a chosen crop	<ul style="list-style-type: none"> • identify pests, diseases and weeds attacking a chosen crop • list different methods of controlling diseases, pests and weeds • describe how crop rotation can control diseases, pests and weeds for a chosen crop

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
2.2.7 Harvesting, storing and marketing of cash crops	understand when a particular cash crop is ready for harvesting, storing and marketing	<ul style="list-style-type: none"> • describe a suitable method of harvesting a chosen crop • specify the correct conditions necessary for storing products of a particular crop to avoid damage • investigate the best way to market the crop in order to get the highest price • sell the crop products to generate income for the school and calculate the profit or loss from their sale
2.3 Fodder production (pastures) <i>(choose one grass or one legume suitable for the area: grasses: rye grass, elephant grass, buffalo grass or any other; legumes: cow peas, beans, lucerne, clover)</i>		
2.3.1 Importance of fodder	appreciate that Namibia is a dry country, thus fodder is an important source of feed for our animals	<ul style="list-style-type: none"> • discuss the need for provision of fodder to animals in Namibia • describe the nutritional and economic value of the chosen fodder crop
2.3.2 Soil and climatic requirements	understand the optimal soil and climatic requirements needed for better production of the crop	<ul style="list-style-type: none"> • describe the soil and climatic requirements of a chosen crop • compare the local soil conditions with conditions required by the chosen crop • compare and contrast the advantages and disadvantages of rainfall and irrigation to the chosen crop • explain what is meant by irrigation and its necessity for plant growth • suggest and defend the best irrigation method for a chosen crop
2.3.3 Cultivars	realize that there are different cultivars for any particular crop	<ul style="list-style-type: none"> • explain what is meant by a cultivar • collect and identify different cultivars for appropriate local conditions • explain the necessity of choosing the right cultivar for the chosen crop

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
2.3.4 Preparation of soil for planting	apply knowledge and skills to the preparation of soil for planting purposes	<ul style="list-style-type: none"> • explain why different fertilizers should be applied in the right way, right amount and at the right time • demonstrate how to prepare the soil for planting a particular fodder crop: cleaning the area, determining the soil pH, measuring the plot, digging, leveling, fertilizing
2.3.5 Planting of fodder crops	understand the importance of the use of quality seeds and the best planting method	<ul style="list-style-type: none"> • carry out an experiment to test the viability of the seed • describe the best methods of planting a chosen fodder crop • plant seeds according to the required time of the season, depth and spacing
2.3.6 Taking care of fodder crops		
2.3.6.1 Record keeping	understand the importance of keeping records	<ul style="list-style-type: none"> • explain the value of record keeping in crop production • design and keep records of all activities and data using record cards or computers where applicable
2.3.6.2 Fertilizing	appreciate the value of fertilizers	<ul style="list-style-type: none"> • explain why different fertilizers should be applied in the right way, right amount and at the right time • identify different sources of plant nutrients <ul style="list-style-type: none"> * organic (compost, grass, and manure) * inorganic fertilizers (lime, NPK) • apply fertilizers in the right way, amount and at the right time • discuss the advantages and disadvantages of inorganic fertilisers
2.3.6.3 Pests, diseases and weed control	understand the negative effects of pests, diseases and weeds for a chosen crop	<ul style="list-style-type: none"> • identify pests, diseases and weeds attacking a chosen crop • list different methods of controlling diseases, pests and weeds • describe how crop rotation can control diseases, pests and weeds

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
2.3.7 Harvesting and storing of fodder crops	understand when a particular fodder crop is ready for harvesting and storing	<ul style="list-style-type: none"> • describe how a crop can be used in a grazing system • harvest (cut) their crop in the right way and at the right time • discuss the methods in which pasture crops can be preserved for later use by animals in times of drought or dry conditions • specify the correct conditions necessary for the storage of a chosen fodder crop to avoid damage

THEME 3: ANIMAL PRODUCTION

<p>Examples of suggested activities for the theme and subsequent topics:</p>	<ul style="list-style-type: none"> • formulating or constructing a balanced diet for the animals • visit local farms and collect pictures, slides and photos of different breeds of pigs and dairy cattle to make posters • demonstrate how to catch and bring down cattle while observing safety measures • construct a small pond at school and stock it with small fish • prepare fish rations and feed the fish • choose and demonstrate the use of correct tools in performing the following practices: marking, dosing, immunization, dipping/spraying, castration of animals and dehorning • demonstrate or observe the use of hand milking and machine milking 	
TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
3.1 General aspects		
3.1.1 Animal nutrition	understand the significance of good nutrition in animals	<ul style="list-style-type: none"> • define the concept balanced diet • state the importance of a balanced diet • prepare a balanced ration from locally available foodstuff
3.1.2 Animal selection for breeding purpose	understand the importance of the selection of livestock for breeding purposes	<ul style="list-style-type: none"> • identify different breeding systems such as inbreeding, line-breeding, cross breeding and upgrading • explain the importance of cross breeding in animal production
3.1.3 Breeding systems	acquire knowledge of different breeding systems of livestock	<ul style="list-style-type: none"> • identify different breeding systems such as inbreeding, line breeding, cross breeding and upgrading • explain the importance of cross breeding in animal production

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
3.2 Fish Farming (aquaculture)		
3.2.1 Importance of fish farming in Namibia	understand why fish farming is important to Namibia	<ul style="list-style-type: none"> • explain the importance of fish farming to the economy of the country • identify fresh water fish such as tilapia, carp, trout and other species
3.2.2 Suitable places for fish production	gain knowledge of places where fish can be successfully produced	<ul style="list-style-type: none"> • identify suitable places for fish production such as dammed ponds and diverted water ponds • describe how to construct a small aquarium at school
3.2.3 Stocking and feeding fish	acquire knowledge on fish stocking and feeding	<ul style="list-style-type: none"> • explain the advantages and disadvantages of floating and sinking pellets • name types of feed for fish • discuss factors that influence fish stocking rates • suggest the best time for fish stocking
3.2.4 Diseases, parasites and predators	gain insight into different types of disease, parasites and predators that attack fish	<ul style="list-style-type: none"> • investigate the types of diseases, parasites and predators that attacks fish • discuss how to prevent water pollution to keep the fish in healthy condition • explain ways of controlling fish parasites by using substances such as formalin, acriflavin, and potassium permanganate • identify fish parasites such as fish lice, tapeworms, anchor worms, gill flukes and flatworms • identify fish predators such as eagles, tortoises, crocodiles, otters, catfish and others • generate ideas on how to protect fish from predators
3.2.5 Harvesting fish	understand different methods of harvesting fish	<ul style="list-style-type: none"> • investigate the ideal time and conditions of harvesting fish • describe the fish harvesting methods such as harvest basins, traps, nets, hook and line

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
3.2.6 Preserving, storing and marketing fish	apply knowledge and skills to fish preservation, storage and marketing	<ul style="list-style-type: none"> • explain ways of fish preservation such as refrigeration, deep freezing, canning, drying and smoking • suggest how to store dried and smoked fish • discuss the marketing process of fish and fish products (export and import)
3.3 Dairy farming		
3.3.1 Breeds	acquire knowledge of the different breeds in dairy cattle	<ul style="list-style-type: none"> • identify important dairy breeds such as Jersey, Friesian, Ayrshire and Sanga, by visiting farms or collecting pictures, slides and photos or watching videos • distinguish between good and poor characteristics of a dairy breed • describe the characteristics of one of the breeds
3.3.2 Handling dairy animals	understand the techniques and methods of handling dairy cattle	<ul style="list-style-type: none"> • state reasons for marking, dosing, immunizing, castrating, dehorning, dipping/spraying, weaning and regular inspection of dairy cattle • calculate the age of an animal by counting the number of permanent teeth • explain what is meant by artificial insemination and its importance in breeding dairy cattle • tabulate the advantages and disadvantages of artificial insemination in dairy cattle
3.3.3 Feeding	acquire knowledge of various feeds required by dairy cattle at different stages	<ul style="list-style-type: none"> • describe the different types of feed required at each stage • explain the importance of supplementary feeding such as mineral licks, hay, silage, cultivated pastures and concentrates • outline feeds required at different stages of dairy cattle: <ul style="list-style-type: none"> - gestation → production ration - lactation → production ration - calf → colostrum - heifer → maintenance ration - bull → production ration

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
3.3.4 Dairy production	understand the importance of milking techniques and dairy products	<ul style="list-style-type: none"> • describe the composition and nutritional value of milk • explain the processes used to make different dairy products, e.g. churning, preservation, cooling and skimming • explain the importance of hygiene in dairy production • collect and identify samples of different products obtained from dairy cattle • discuss the methods of weighing milk and keeping records using record cards or computers, where applicable
3.3.5 Animal health	acquire knowledge of common diseases and parasites affecting the chosen breed	<ul style="list-style-type: none"> • identify diseases according to the symptoms • describe the role of veterinary services in animal health • describe and demonstrate how to prevent and control diseases and parasites affecting dairy cattle
3.3.6 Marketing	gain insight into different ways of marketing dairy products	<ul style="list-style-type: none"> • explain the procedures to be followed in marketing dairy products • investigate and suggest ways of marketing different dairy products

THEME 4: FARMING TECHNOLOGY

Examples of suggested activities for the theme and subsequent topics:	<ul style="list-style-type: none"> • demonstrate the use of the following tools: spirit level, builder's square, spot board, lump hammer, bolster, mason's pins and twine, trowel, tape measure, wheelbarrow, shovel • demonstrate the process of concrete mixing using the correct ratio of materials • make bricks by using locally available materials: sun dried mud bricks, soil cement bricks, fire-baked bricks 	
TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
4.1 Farm Buildings		
4.1.1 Building Tools	develop skills on the usage of building tools on the farm	<ul style="list-style-type: none"> • organize various building tools to be used on the farm • explain how specific tools are used in constructing buildings, e.g. spirit level, building square, wheel burrow, and trowel
4.1.2 Bricks and concrete	understand the processes of concrete mixing and brick making	<ul style="list-style-type: none"> • describe the procedure of concrete mixing • describe the process of making bricks from available materials
4.1.3 Plastering and painting	acquire knowledge and skills in the painting and plastering of building structures	<ul style="list-style-type: none"> • explain the reasons for plastering and painting building structures • demonstrate their skills in plastering and painting structures
4.1.4 Roofing materials	know how to use locally available materials to make roofs	<ul style="list-style-type: none"> • explain the value of using locally available materials to make roofs • collect and identify roofing materials and demonstrate how to use them

GRADE 10

THEME 1: GENERAL AGRICULTURE

<p>Examples of suggested activities for the theme and subsequent topics:</p>	<ul style="list-style-type: none"> • draw a map of Namibia and indicate the areas of crop production and animal production • conduct an experiment to compare the growth of plants in hot and cold conditions • keep records of rainfall according to the amount and distribution of rain in the area • investigate the system of land tenure in the area and Namibia in general, and indicate the system's influence on agricultural productivity and present findings to the class 	
<p>TOPIC</p>	<p>LEARNING OBJECTIVES Learners will:</p>	<p>BASIC COMPETENCIES Learners should be able to:</p>
<p>1.1 The importance of Agriculture</p>	<p>understand the importance of agriculture to the family, local community and the Namibian nation</p>	<ul style="list-style-type: none"> • discuss the importance of agriculture to the family, local community and the Namibian nation • investigate whether Namibia is self-sufficient in terms of food production (food security) • present their findings on the role of agriculture as a supplier of food and foreign income through imports and exports
<p>1.2 Environmental influences on plant growth</p>	<p>understand the effects of environmental factors on plant growth</p>	<ul style="list-style-type: none"> • describe the effects of: <ul style="list-style-type: none"> - <i>temperature</i> on plant growth and evaporation - <i>humidity</i> on transpiration - <i>wind</i> on evaporation, transpiration, soil erosion and physical damage to plants - <i>rainfall</i> on plant growth (variation in distribution, effectiveness, reliability and intensity of rain)
<p>1.3 Soil and water conservation</p>	<p>understand the importance of the conservation of soil moisture</p>	<ul style="list-style-type: none"> • list the sources of water required for the growth of a plant • describe the conservation of soil moisture through the processes of mulching and minimum tillage • compare water loss from a mulched plot and a bare plot

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
1.4 General principles of land use and reclaiming	gain insight into different land tenure systems including land reclamation	<ul style="list-style-type: none"> • evaluate different land tenure systems in Namibia • describe how land can be reclaimed for agricultural purpose • discuss the importance of mixed farming, crop rotation and monoculture on crop production • describe the difference between commercial farming and communal farming (subsistence farming) • describe ways of reclaiming the land for agricultural purposes such as clearing, slash and burn, ploughing, draining, fertilizing and plugging gullies • explain how the potential of the land for crop cultivation can be limited by environmental factors
1.5 Population density and agriculture	understand that an increase in population density leads to a need for efficient use of land	<ul style="list-style-type: none"> • explain the effects of population increase on land use and food production • investigate how population growth may impact agricultural production
1.6 The impact of HIV and AIDS on farm workers and food security	understand the effects of HIV and AIDS on human resource and food production	<ul style="list-style-type: none"> • explain the difference between HIV and AIDS • explain how HIV and AIDS impacts on human resources and food production in our country

THEME 2: PLANT PRODUCTION

<p>Examples of suggested activities for the theme and topics:</p>	<ul style="list-style-type: none"> • demonstrate various types of weathering processes • analyze soil composition by means of experiments (organic matter, air, water, and living organisms) • make compost from garden refuse and other available organic substances • observe the use of equipment and tools by visiting nearby farms • use soil analysis techniques in testing the soil for fertility and determine the soil pH by means of an experiment • demonstrate the various skills in growing and take care of trees • identify the chosen crop from pictures and make posters • cultivate soil in the school's garden by using suitable and available tools and equipment • investigate the best way of marketing a crop in order to get the highest price 	
TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
2.1 Soils		
2.1.1 Soil formation	realize that soil is formed from rocks through the process of weathering	<ul style="list-style-type: none"> • describe the formation of soil through physical, chemical and biological weathering processes
2.1.2 Soil composition	gain insight into the different components of soil	<ul style="list-style-type: none"> • describe the components of different types of soil in terms of sand, silt, clay, dead organic matter, air, water and living organisms • explain the importance of different soil components to the growth of plants
2.1.3 Soil types	acquire knowledge of different types of soils	<ul style="list-style-type: none"> • distinguish between the different types of soils used for agricultural purposes • describe the main characteristics of sand, clay and loam in terms of particle size, pore space, water retention, cultivation and plant growth • compare the water holding capacity and drainage of different types of soils by means of an experiment

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
2.1.4 Soil fertility	understand the importance of plant nutrients, the nitrogen cycle and soil pH	<ul style="list-style-type: none"> describe the major functions of the following plant nutrients: nitrogen, phosphorus, potassium, calcium, magnesium, and sulphur state one organic and one inorganic source of nitrogen, phosphorous and potassium identify and explain factors affecting soil pH such as rainfall, irrigation, and the application of fertilizers or manure describe the nitrogen cycle without reference to a specifically named micro-organism illustrate the negative effects of salt on plant growth by means of an experiment make compost from garden refuse and other available organic substances
2.1.5 Soil erosion and conservation	understand the causes of soil erosion and how soil can be conserved	<ul style="list-style-type: none"> describe the causes of soil erosion and methods to reduce soil erosion
Choose any one of section 2.2. and 2.3		
2.2 Tree Growing		
2.2.1 Importance of trees	understand the importance of trees and shrubs to the environment and human beings	<ul style="list-style-type: none"> discuss the importance of trees and shrubs as source of food for humans and animals, for timber, for beautifying the land, as shelters, as wind breaks, their role in the water cycle, and as components in the ecosystem
2.2.2 Factors influencing tree growth	acquire knowledge of the environmental factors that influence the growth of trees	<ul style="list-style-type: none"> describe how rainfall, temperature, soil, and light can influence the growth of trees

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
2.2.3 Growing of (indigenous) trees	acquire knowledge and skills to grow trees	<ul style="list-style-type: none"> describe different methods of growing trees within the school environment using seeds and truncheons /cuttings describe how to store indigenous seeds to be used in growing trees suggest the best irrigation method for growing trees describe how to grow trees from seeds in terms of seedbed preparation, sowing, pricking outline, pruning and thinning investigate the effects of deforestation on the environment
2.2.4 Fire precautions in tree plantations	understand ways in which forest fire can damage exotic and indigenous tree plantations	<ul style="list-style-type: none"> describe the effect of fire on the environment debate whether forest fires are sometimes necessary explain the legislation on prevention of veld fires and caring of protected trees
2.3 Cereal Crops (Maize/Millet)		
2.3.1 Importance of a chosen crop	understand the importance and nutritional value of a chosen crop	<ul style="list-style-type: none"> determine the importance and nutritional value of a chosen crop for the family, the creation of jobs and the economy of the country
2.3.2 Soil and climatic requirements	gain insight into the ideal soil and climatic conditions of a chosen crop	<ul style="list-style-type: none"> discuss reasons for the suitability of a crop for local conditions compare the local conditions with those required by a chosen crop describe ways in which a chosen crop is adapted to the local conditions suggest and explain the best irrigation method for a chosen crop
2.3.3 Cultivars	understand the different characteristics of a chosen cultivar	<ul style="list-style-type: none"> explain what is meant by a cultivar identify pictures of a particular cultivar state reasons for choosing a particular cultivar

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
2.3.4 Soil preparation	acquire knowledge and techniques in the preparation of soil for planting a chosen crop	<ul style="list-style-type: none"> • identify equipment and tools used in preparing soil on a large and small scale • describe different purposes of various tools and equipment (deep ploughing, shallow plowing, harrowing /leveling)
2.3.5 Planting	acquire knowledge in relation to the planting methods, planting time and spacing of seeds/crops	<ul style="list-style-type: none"> • explain the importance of viable seeds • specify and describe the planting methods, planting time, planting depth and spacing of seeds for a chosen crop • discuss factors affecting plant spacing and planting depth
2.3.6 Management	understand the importance of good management practices of crop production	<ul style="list-style-type: none"> • explain the importance of organic and inorganic fertilizers • describe the methods of controlling diseases, pests and weeds in the school garden • design and keep records of a planted crop by using record cards or computers, where applicable
2.3.7 Harvesting, storing and marketing	understand when a chosen crop is ready for harvesting, storing and marketing	<ul style="list-style-type: none"> • describe the different methods of harvesting a chosen crop in the right way and at the right time • specify the correct conditions necessary for the storage of a chosen crop product • explain ways of marketing a chosen crop • sell the crop products to obtain income for the school and calculate the profit or loss from their sale

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
2.4 Grazing and veld management		
2.4.1 Importance of grass	know the importance of grass in veld management	<ul style="list-style-type: none"> • discuss and explain the importance of grass for animals and the environment (controlling erosion, restoring soil fertility, as feed for livestock)
2.4.2 Types of veld	develop an understanding of different types of veld	<ul style="list-style-type: none"> • describe the characteristic of different types of veld • compare the different types of veld (sweet, sour and mixed veld) • distinguish between annual and perennial grass
2.4.3 The effects of bushes on grass growth	understand the effect and prevention of bush encroachment in the veld	<ul style="list-style-type: none"> • explain the causes of bush encroachment and its effects on the environment and animals • describe how to control bush encroachment in the veld
2.4.4 Veld management principles	understand the principles of veld management	<ul style="list-style-type: none"> • discuss factors that influence the carrying capacity of the land • discuss the influence of rotational grazing and stocking rate on the productivity of the veld
2.4.5 Pastures	acquire knowledge in relation to the value of different pastures for livestock breeding	<ul style="list-style-type: none"> • distinguish between different types of pastures • explain the value of different types of pastures for animals

THEME 3: ANIMAL PRODUCTION

<p>Examples of suggested activities for the theme and subsequent topics:</p>	<ul style="list-style-type: none"> • participate in the feeding and watering of animals • draw a map of Namibia and identify ostrich and beef producing areas • demonstrate how to catch, lead, bring down, calculate the age of, dose, immunize, dehorn, earmark, and castrate animals • handle animals or visit a nearby farm to observe how animals are handled • draw a map showing all the registered conservancies in Namibia 	
<p>TOPIC</p>	<p>LEARNING OBJECTIVES Learners will:</p>	<p>BASIC COMPETENCIES Learners should be able to:</p>
<p><i>Note: Section 3.1 and 3.2 are compulsory. (choose any one of Section 3.3 and 3.4)</i></p>		
<p>3.1 General Aspects</p>		
<p>3.1.1 Feeding</p>	<p>gain insight into the value of feeding animals a balanced diet, and the importance of the digestive system of livestock</p>	<ul style="list-style-type: none"> • compare the structures and functions of the digestive systems of ruminant and non-ruminant animals • describe the importance of a balanced ration • discuss the essential constituents of livestock feeds, such as carbohydrates, proteins, fats and oil, minerals, vitamins and water
<p>3.1.2 Breeding and selection</p>	<p>understand the aims of breeding and selection of livestock in agriculture</p>	<ul style="list-style-type: none"> • discuss the aims of livestock breeding and artificial selection • explain the meaning of phenotype and genotype • describe livestock breeding systems such as inbreeding, line breeding, cross breeding and upgrading • explain the practice of livestock breeding systems to improve yield, disease resistance, hardiness and appearance in animals

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
3.1.3 Livestock health	distinguish the different types of diseases and parasites affecting livestock in Namibia	<ul style="list-style-type: none"> • name important diseases and parasites affecting livestock and identify their symptoms • list organisms that causes different diseases • identify parasites such as roundworm, ticks and liver flukes • describe the measures of preventing and controlling diseases and parasites affecting livestock in our country
3.2 Community-based natural resource management (conservancies)		
3.2.1 Management of Conservancies in Namibia	acquire knowledge of the importance of conservancies to the Namibian society	<ul style="list-style-type: none"> • define what is meant by conservancies • discuss the history of community-based natural resource management in Namibia • discuss the importance of conservancies to commercial farmers and areas of communal land in our country • identify the updated list of all registered communal areas and conservancies in Namibia
3.2.2 Legislation governing conservancies in Namibia	gain insight into the new legislation which enables conservancies to use, manage and benefit from communal land	<ul style="list-style-type: none"> • explain the principle behind the laws relating to ownership of registered conservancies over-hunttable game animals and birds, including the utilization of forestry resources • discuss the government's condition of acceptance of the establishment of conservancies for communal use • describe the requirement by law for communal farmers to apply for permits to use protected and specially protected game and forests in their local areas
3.2.3 Conservancies and wildlife councils	understand the difference between conservancies and wildlife councils	<ul style="list-style-type: none"> • tabulate the differences between the functions of the conservancies and wildlife councils in Namibia

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
3.2.4 Conservation of community forestry in Namibia	understand the importance of empowering local communities to manage forest resources in a sustainable way for their improved livelihood	<ul style="list-style-type: none"> • explain the meaning of community forests and the role of traditional authorities in forest management • describe the main steps for the establishment of community forests by interested communities in Namibia • discuss the benefits obtained by the communities from well managed community forests • discuss the requirements for communities to obtain rights to register community forests
3.2.5 Community-based tourism	become acquainted with the content of the community based tourism policy of Namibia	<ul style="list-style-type: none"> • explore ways in which communities can benefit from the tourism industry to promote social and economic development • explain how tourism provides opportunities for income generation for local communities and the promotion of entrepreneurship • describe how tourism helps to provide capacity of rural residents as they engage in tourism related activities
3.3 Ostrich Farming		
3.3.1 History of ostrich farming in Namibia	acquire knowledge of the history of ostrich farming in Namibia	<ul style="list-style-type: none"> • briefly explain the history of ostrich farming in Namibia
3.3.2 Reproduction	gain insight into the reproductive system of the ostrich	<ul style="list-style-type: none"> • describe the functions of the male and female reproductive systems of an ostrich • sketch the male and female reproductive structures • draw and label the structure of an ostrich egg
3.3.3 Nutrition	understand the importance of providing good nutrition to ostriches	<ul style="list-style-type: none"> • explain the importance of feeding ostriches a well-balanced ration to reproduction and the growth of chicks • discuss the minimum requirements of feeding rations • compare the nutritional requirements of a chick and an adult ostrich

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
3.3.4 Health and diseases	understand that ostriches can suffer from infections and nutritional diseases	<ul style="list-style-type: none"> list the most common diseases that affects ostriches describe the causes of infectious, nutritional and parasitic diseases
3.3.5 Management systems	distinguish between different management systems	<ul style="list-style-type: none"> compare extensive, semi-extensive and intensive management systems describe the advantages and disadvantages of the different management systems
3.3.6 Handling facilities and techniques	apply knowledge and skills on handling ostriches	<ul style="list-style-type: none"> describe the handling techniques of adults ostriches and chicks identify ostrich handling facilities, e.g.: breeding paddock, rearing pens, incubators, brooders and handling ramps
3.3.7 The role of ostrich farming in Namibia	understand the role of ostrich farming in Namibia	<ul style="list-style-type: none"> explain the contribution of ostrich farming to the economy of our country discuss the importance of ostrich products such as skin (leather), meat, feathers, and eggs
3.3.8 Record keeping	realize the importance of record keeping	<ul style="list-style-type: none"> explain the importance of record keeping in ostrich farming describe some examples of record keeping such as the ostrich stock register, ostrich record sheets and tagging, including the use of computer technology where applicable
3.3.9 Marketing	acquire skills in the different aspects of marketing ostriches and their products	<ul style="list-style-type: none"> explain what is meant by marketing identify countries that import Namibian ostrich products and live ostriches/chicks explain the procedures to be followed in marketing ostrich products and ostriches/chicks debate the future of the ostrich industry in Namibia

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
3. 4 Beef Cattle		
3.4.1 History of beef cattle farming in Namibia	acquire knowledge of the history of beef cattle farming in Namibia	<ul style="list-style-type: none"> investigate and briefly explain the history of beef farming in Namibia draw a map of Namibia and identify beef producing areas
3.4.2 Breeds	gain insight into different types of beef breeds	<ul style="list-style-type: none"> identify the most important breeds of cattle, such as Afrikaner, Brahman, Bonsmara, Sanga, and Hereford describe the characteristics of each breed
3.4.3 Reproduction	understand the reproductive system of a cow and a bull	<ul style="list-style-type: none"> identify parts of the reproductive systems of both male and female beef cattle state the functions of the reproductive parts of male and female beef cattle draw and label the reproductive systems of male and female cattle
3.4.4 Feeding	acquire knowledge of feeds required for beef cattle at different stages	<ul style="list-style-type: none"> describe different types of feed required in each stage explain the importance of supplementary feeding such as mineral licks, hay, silage, cultivated pastures and concentrates outline feeds required at different stages of beef cattle: <ul style="list-style-type: none"> - gestation → production ration - lactation → production ration - calf → colostrums - ready for marketing → production ration
3.4.5 Handling of animals	acquire knowledge and skills on the handling of animals	<ul style="list-style-type: none"> explain reasons for carrying out different handling processes in beef cattle
3.4.6 Management systems	understand the different management systems in beef production	<ul style="list-style-type: none"> describe the extensive, semi-extensive and intensive management systems describe the advantages and disadvantages of the different management systems discuss the suitability of each management system in their own area, e.g. extensive in communal areas
3.4.7 The role of beef cattle in Namibia	understand the role of beef cattle farming in Namibia	<ul style="list-style-type: none"> explain the contribution of beef cattle farming to the economy of the country discuss the importance of beef cattle products such as meat, hides (leather)

TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
3.4.8 Health and diseases	gain insight into the types of diseases and parasites affecting beef cattle	<ul style="list-style-type: none"> • identify important diseases and parasites affecting beef cattle in their regions and Namibia in general, e.g. red water, heart water, foot and mouth disease, anthrax, roundworm and ticks • describe the symptoms, causes and control of the most important diseases and parasites • distinguish ways in which diseases are spread: air-borne, water-borne, infectious, contagious, vectors and nutritional diseases • discuss legislation on animal diseases with specific reference to notifiable diseases and animal movements
3.4.9 Record keeping	understand the importance of record keeping in beef cattle farming	<ul style="list-style-type: none"> • explain the importance of record keeping in beef cattle farming • describe examples of record keeping such as the animal register, record sheets and tagging, including the use of computer technology where applicable
3.4.10 Marketing	acquire skills on the different aspects of marketing beef cattle and their products	<ul style="list-style-type: none"> • identify countries that import beef and/or beef cattle products from Namibia • describe the requirements for the export of beef cattle and beef products to regional and international markets • explain ways in which beef cattle and their products are marketed • debate the future of the beef industry in Namibia

THEME 4: FARMING TECHNOLOGY

Examples of suggested activities for the theme and subsequent topics:	<ul style="list-style-type: none"> • demonstrate the use of various tools used in the installations of water supply systems • demonstrate how to replace the basic parts of a water pump, e.g. handle, rod and valves 	
TOPIC	LEARNING OBJECTIVES Learners will:	BASIC COMPETENCIES Learners should be able to:
4.1 Water Supply		
4.1.1 Tools	acquire knowledge and skills on how to use various tools in water supply systems	<ul style="list-style-type: none"> • explain how specific tools are used in the installation of water supply systems • organize various tools to be used in the installation of water systems • demonstrate and explain the use of the following tools: pulley, block and tackle, pipe nipple, pipe spanners, vice-grip
4.1.2 Water pumps	acquire skills on how to replace the basic parts of the water pumps	<ul style="list-style-type: none"> • identify different water pumps used for supplying water to farmers • state the functions of the basic parts of the water pump
4.1.3 Materials	acquire skills in using different materials for water installations	<ul style="list-style-type: none"> • explain the functions of different materials used in the installation of water • demonstrate the use of the following: PVC pipe, galvanized iron pipe, connectors, nipples adaptors, T-piece, tap washer, reducer, elbow joint
4.1.4 Maintenance of water installations	realize the importance of regular checking and cleaning of water installations	<ul style="list-style-type: none"> • explain the necessity of regular cleaning and maintenance of water installations • demonstrate the cleaning and maintenance of water installations

11. ASSESSMENT

A learner-centred curriculum and learner-centred teaching use a broad range of knowledge and skills which are relevant to the knowledge-based society. The basic competencies in the syllabuses state what understanding and skills a learner must demonstrate as a result of a teaching-learning process, and which will be assessed. However, it is intended that the curriculum be learning-driven, not assessment and examination driven. Assessment and examination are to support learning.

11.1 Continuous assessment

In order to capture the full range and levels of competence, a variety of formal and informal continuous assessment situations is needed to give a complete picture of the learner's progress and achievements in all subjects. Continuous assessment must be clear, simple and manageable, and explicitly anchored in learner-centred principles and practice. Teachers must elicit reliable and valid information of the learner's performance in the basic competencies. The information gathered about the learners' progress and achievements should be used to give feedback to the learners about their strong and weak points, where they are doing well, and why, and where they need to try more, how, and why. The parents should be regularly informed about the progress of their child in all subjects, be encouraged to reward achievements, and given suggestions as to how they can support their learning activities.

The learner's progress and achievements in all subjects must be reported to parents on the school report.

11.2 Formative and summative assessment

The two modes of assessment used are formative continuous assessment and summative assessment. Formative continuous assessment is any assessment made during the school year in order to improve learning and to help shape and direct the teaching-learning process. Assessment has a formative role for learners if and when:

- it is used to motivate them to extend their knowledge and skills, establish sound values, and to promote healthy habits of study
- assessment tasks help learners to solve problems intelligently by using what they have learned
- the teacher uses the information to improve teaching methods and learning materials

Summative assessment is an assessment made at the end of the school year based on the accumulation of the progress and achievements of the learner throughout the year in a given subject, together with any end-of-year tests or examinations. The result of summative assessment is a single end-of-year promotion grade.

11.3 Informal and formal methods

The teacher must assess how well each learner masters the basic competencies described in the subject syllabuses and from this gain a picture of the all-round progress of the learner. To a large extent, this can be done in an informal way through structured observation of each learner's progress in learning and practice situations while they are investigating things, interpreting phenomena and data, applying knowledge, communicating, making value judgements, and in their participation in general.

When it is necessary to structure assessment more formally, the teacher should as far as possible use the same sort of situation as ordinary learning and practice situations to assess the competency of the learner. The use of formal written and oral tests can only assess a limited range of competencies and therefore should not take up a great deal of time. Short tests in any subject should be limited to part of a lesson and only exceptionally use up a whole lesson. End-of-term tests should only be written in the first lesson of the day, so that teaching and learning can continue normally for the rest of the time.

In Grade 10 a mock examination may be held to learn examination skills and to identify areas of the syllabus which may need extra attention. Mock examinations only serve a useful purpose if they are used as a learning experience in how to organise oneself, how to read the paper, how to interpret and answer examination-type questions, and how to allocate time in an examination. This involves the teacher going through the paper systematically with the class when their answers are returned.

11.4 Evaluation

Information from informal and formal continuous assessment is to be used by the teacher to know where it is necessary to adapt methods and materials to the individual progress and needs of each learner. At the end of each main unit of teaching, and at the end of each term, the teacher together with the learners should evaluate the process in terms of tasks completed, participation, what the learners have learnt, and what can be done to improve the working atmosphere and achievements of the class.

11.5 Criterion-referenced grades

When grades are awarded in continuous assessment, it is essential that they reflect the learner's actual level of achievement in the Basic Competencies, and are not related to how well other learners are achieving or to the idea that a fixed percentage of the learners must always be awarded a Grade A, B, C, and so on (norm-referencing). In criterion-referenced assessment, each letter grade must have a descriptor for what the learner must demonstrate in order to be awarded the grade. Grade descriptors must be developed for each subject for each year. It is important that teachers in each department/section work together to have a shared understanding of what the grade descriptors mean, and how to apply them in continuous assessment, so that grades are awarded correctly and consistently across subjects. Only then will the assessment results be reliable.

11.6. Grade descriptors in the Junior Secondary Phase

In the Junior Secondary phase, grades A-G and U (ungraded) apply as follows:

Grades	Mark range	Grade descriptor
A	80%+	Achieved Basic Competencies exceptionally well. The learner is outstanding in all areas of competency.
B	70-79%	Achieved Basic Competencies very well. The learner is highly proficient in most areas of competency.
C	60-69%	Achieved Basic Competencies well.
D	50-59%	Achieved Basic Competencies satisfactorily.
E	40-49%	Achieved a sufficient number of Basic Competencies to exceed the minimum competency level.
F	30-39%	Achieved the Basic Competencies needed to be considered competent. The learner needs learning support.
G	20-29%	Achieved the minimum number of Basic Competencies worthy of a grade. The learner needs learning support
U	0-19%	Did not achieve the minimum level of competence. The learner needs learning support

11.7 Conducting and recording assessment

Continuous Assessment should be planned and programmed at the beginning of the year, and kept as simple as possible. Marks given for class activities, practical activities, project work, assignments, homework, and short tests on completion of a topic may be recorded for continuous assessment.

11.8 Assessment objectives

A Knowledge with Understanding

Learners should be able to demonstrate knowledge and understanding in relation to:

- scientific language, terminology, symbols, quantities and units;
- instruments and apparatus, including techniques of operation and aspects of safety;
- the use of scientific facts, concepts, patterns and principles.

The objective is made up of Basic Competencies which require the learner to identify, give examples, name, list, state, indicate, give reasons, suggest ways, recognise, define, discuss and to outline.

B Handling Information, Application and Solving Problems

Using written, symbolic, graphical and numerical material, learners should be able — to:

- analyse novel situations in a logical and deductive manner;
- locate, select, organise and present information from a variety of sources;
- translate information from one form to another;
- use information to identify patterns, report trends and draw inferences;
- present reasoned explanations for phenomena, patterns and relationships;
- make a value judgement about scientific and technological applications and their social, economic and environmental implications;
- solve problems.

This objective is made up of Basic Competencies which require the learner to predict, relate, describe, calculate, find, estimate, determine, sketch, and select, analyse, extract and analyse, synthesize, compare and discuss, deduce, explain, distinguish, suggest, interpret, and evaluate.

C Practical (Experimental and Investigative) Skills

Learners should be able to:

- use and organise techniques, apparatus and materials;
- observe, measure and record;
- handle, process and evaluate experimental observations and data;
- plan investigations.

11.9 Continuous Assessment: Detailed guidelines

Continuous assessment at Junior Secondary level consists of informal and more formal assessment. The table in 11.9.2 specifies how formal assessments are required for assignments, projects and shorter tests, in order to give an overall picture of the learner's knowledge and skills.

11.9.1 Types of Continuous Assessment

Practical Investigations: These are assessments of practical skills done during a practical activity where learners are required to plan and carry out investigations, and collect, report and analyse information. Except for one big investigation or project during the first or second term, these activities should assess not more than two skills and should count 15 or 10 marks (in the first and second term 15 marks and in the third term 10 marks).

Project: A project is a longer assignment than a topic task or investigation and gives learners an opportunity to complete an investigation into one of the theme topics outlined in the syllabus. This type of investigation will enable the teacher and learner to pursue a topic in greater depth and in a more lively and creative way than possible with short discrete topic tasks or investigations.

Topic Tasks: These are activities that most teachers already use in their day-to-day teaching. These are recorded and assessed activities that could introduce a topic or be used during teaching of a topic and /or revision of a topic. They may well include assessment involving competencies to do with locating information, conducting surveys, analysing information or presenting information. Topic tasks will involve assessments of basic competencies in all assessment objectives; however, not all assessment objectives need to be present in every topic task. The greatest emphasis should be placed on assessment objectives B and C to meet the weighting shown in the Specification Grid at the end. The topic task should count 10 marks when entered into the final mark sheet.

Topic Tests: Completed topics should be ended with a test indicating the achievements of the learners in these topics

End of Term Test: A comprehensive test of the whole term's work. No homework should be assigned during the time of writing the end of term test.

11.9.2 Summary of Continuous Assessment tasks

GRADES 8 and 9						
COMPONENTS	TERM 1		TERM 2		TERM 3	
	Number & Marks	Total CA	Number & Marks	Total CA	Number & Marks	Total CA
Practical Investigations	2×15	30	1×15	15	1×10	10
Projects			(1×30)÷2	15		
Topic Tasks*	2×10	20	2×10	20	2×10	20
Topic Tests	(2×20)÷2	20	(2×20)÷2	20	(2×20)÷2	20
End of Term Test	65	(65×2) 130	65	(65×2) 130		
Term Mark		200		200		50
Weighted Term Mark	200÷2	100	200÷2	100		

GRADE 10				
COMPONENTS	TERM 1		TERM 2	
	Number & Marks	Total	Number & Marks	Total
Practical Investigations	2×15	30	1×15	15
Projects			(1×30)÷2	15
Topic Tasks*	2×10	20	2×10	20
Topic Tests	(2×20)÷2	20	(2×20)÷2	20
End of Term Test	65	(65×2) 130	130	130
Term Mark		200		200
Weighted Term Mark	200÷2	100	200÷2	100

11.10 End of year examinations: Detailed guidelines

In Grades 8 and 9 there will be internal end-of-year examinations. As before, the purpose of these examinations is to focus on how well learners can demonstrate their thinking, communication, and problem-solving skills related to the areas of the syllabus, which are most essential for continuing in the next grade. Preparing for, and conducting these examinations should not take up more than two weeks altogether right at the end of the year.

There will be an external examination at the end of Grade 10. The purpose of the examination is to assess how far each learner can demonstrate their achievement in reaching the competencies as a preparation for everyday life and for further studies or training, and to what extent the system as a whole is enabling learners to achieve optimally.

WRITTEN EXAMINATION GRADES 8-10			
Grades	Description of papers	Duration	Marks
8, 9 and 10	Written Examination This will consist of ONE paper consisting of two sections: SECTION A: 30 Multiple choice questions (30 marks) SECTION B: Variety of structured questions (100 marks)	2 hours 15 minutes	130

11.11 Promotion marks

In Grades 8-10, Continuous Assessment contributes 35% of the summative mark.

COMPONENT	DESCRIPTION	MARKS	WEIGHTING
Written Examination	Paper 1/Section A:	30	15%
	Paper 1/Section B:	100	50%
Continuous Assessment	Topic Tasks, Topic Tests, Practical Investigations/Projects, End of Term Test	70	35%
TOTAL			100%

The promotion marks are calculated as follows:

PROMOTION MARK FOR GRADES 8 & 9				
Term Mark	Term 1	Term 2	Term 3	Total
	200	200	50	
CA mark	$450 \div 45 \times 7$			70
End-of-year examination	130 Marks (Grade 8 & 9)			130
Promotion Mark	Average Term Mark + End-of-Year Examination $\div 2$ $200 \div 2$			100

PROMOTION MARK FOR GRADE 10			
Term Mark	Term 1	Term 2	Total
	200	200	400
CA mark	$400 \div 40 \times 7$ (CA mark for Grade 10 to be sent to DNEA)		70
End-of-year examination	130 Marks (JSC exam)		130
Promotion Mark	Average Term Mark + End-of-Year Examination $\div 2$; $200 \div 2$		100

11.12 Specification grid

The Specification grid below indicates the weighting allocated to each objective for both Continuous Assessment and for the Written Examination.

Assessment Objectives for Written Examination	
Components	Weighting
Objective A Knowledge with Understanding	30%
Objective B Handling Information, Application & Solving Problems	70%
Total	100%
Assessment Objectives for Continuous Assessment	
Components	Weighting
Objective A Knowledge with Understanding	10%
Objective B Handling Information, Application & Solving Problems	40%
Objective C Practical (Experimental and Investigative) Skills	50%
Total	100%

11.13 Assessment criteria

11.13.1 Notes on Practical Assessments of Objective C

It is recommended that a minimum of FIVE practical investigations should be assessed and recorded (two investigations during the first, two during the second and one during the third trimester). One of the investigations during the second trimester should be a project or a practical investigation that will allow all major skills to be demonstrated by learners. The general skills listed for Objective C: Practical (Experimental and Investigative) Skills are related to the basic competencies considered most suitable for continuous assessment. Hence Objective C basic competencies are assessed as mostly as part of CA. The criteria for assessment of practical exercises are set below.

The following five criteria should be considered when marking and assessing practical work with a maximum of five marks per criterion:

Responsibility - the ability to assume responsibility for the task in hand, and to work given instructions without detailed supervision and help

Initiative - the ability to cope with problems arising in connection with the task, to see what needs to be done and to take effective action

Technique - the ability to tackle a practical task in a methodical, systematic way and to handle tools skilfully and to good effect

Perseverance - the ability to see the task through to a successful conclusion with determination and sustained effort

Quality - the ability to attend to detail, so that the work is well-finished and well-presented

Responsibility

<ul style="list-style-type: none"> follows written or verbal instructions without the need for help carries out appropriate safety procedures works well in a group, assumes responsibility easily and leads in the group 	5 or 4
<ul style="list-style-type: none"> follows written or verbal instructions with a little help is aware of the need for safety procedures but has difficulty in recognizing them without guidance works within the group, shows responsibility for the work 	3 or 2
<ul style="list-style-type: none"> follows written or verbal instructions with considerable help shows little regard for safety procedures, even when told works alone, shows some responsibility for the work 	1 or 0

Initiative

<ul style="list-style-type: none"> offers solutions or explanations for unexpected problems recognizes, and is able to anticipate problems solves problems without help comments on imperfections of practical work can plan an investigation involving variables and a control 	5 or 4
<ul style="list-style-type: none"> offers solutions or explanations for unexpected problems after seeking advice solves problems with help recognizes faults in experimental methods, given some indicators can plan an investigation with help 	3 or 2
<ul style="list-style-type: none"> is uncertain how to proceed and requires considerable help recognizes only the most obvious errors in experimental methods after considerable guidance can plan an investigation, but in outline only 	1 or 0

Technique

<ul style="list-style-type: none"> approaches tasks methodically and systematically handles tools/apparatus skilfully and confidently carries out practical procedures with dexterity 	5 or 4
<ul style="list-style-type: none"> handles tools /apparatus effectively carries out practical procedures adequately 	3 or 2
<ul style="list-style-type: none"> handles tools /apparatus clumsily carries out practical procedures with difficulty 	1 or 0

Perseverance

<ul style="list-style-type: none"> completes all the required practical tasks and attendant written work has a positive attitude and is well motivated carries out repetitive procedures willingly 	5 or 4
<ul style="list-style-type: none"> completes the required practical tasks and attendant written work with a little encouragement carries out repetitive procedures willingly 	3 or 2
<ul style="list-style-type: none"> does not complete the required practical tasks and attendant written work is somewhat disinterested /impatient when carrying out work and is disinclined to repeat procedures 	1 or 0

Quality

<ul style="list-style-type: none"> performs practical work thoroughly, pays attention to detail and produces a very good final result produces accurate, clear and neatly presented written work 	5 or 4
<ul style="list-style-type: none"> performs practical work thoroughly for the most part and produces a satisfactory to good final result produces mostly accurate and clearly presented written work 	3 or 2
<ul style="list-style-type: none"> performs practical work in a rushed and superficial way and shows little concern for the finished product produces inaccurate and poorly presented written work 	1 or 0

12. ADDITIONAL INFORMATION

A1: Glossary of Terms Used in Science Teaching and Assessment Activities:

WORD	MEANING
Analyze	Examine information in detail to discover patterns or relationships
Calculate	A numerical answer is required – working must be shown
Compare	Find resemblances and differences
Deduce	Use the information provided to come to a conclusion, e.g. reference to a law or principle, or the necessary reasoning is to be included in the answer
Define	A literal statement is required
Describe	Write down what you do, or what you would see, in as much detail as possible
Determine	Use the information given to work out the answer
Discuss	Give a critical account of the points involved in the topic
Distinguish	Show the difference between one or more variables
Estimate	Implies a reasoned order, statement or calculation about something
Evaluate	Use the information provided to make a judgment about something
Explain	Give a reason for your answer
Find	A general term which means calculate, determine or measure
Give /state /write down	Write down your answer
Identify	Find out what is unique about a material or situation
Interpret	Reasoning or some reference to theory, depending on the content
Investigate	Examine a problem in a systematic way
List	Give a number of points, generally one word for each statement
Outline	Give a brief answer, writing down the main points
Predict	Make a logical deduction either from your own knowledge or from the information given in the question or both
Recognize	Be aware of a fact or problem
Relate	Find the relationship between one or more variables
Select	Choose from a number of alternatives
Sketch	In diagrams, make a simple, freehand drawing and in graph work, the shape and/or position of the curve
Study	Use the information provided or data to investigate a problem in a systematic way
Suggest	Use your knowledge of science and the information in the question to give what you think is the best answer

A2: Assessment Record Sheet for Grades 8 to 10, Terms 1 and 2

ASSESSMENT RECORD SHEET FOR AGRICULTURE (TERMS 1 & 2)												Grade:				
Year:												Teacher:				
Name of Learner	Mark	Practical Investigations			Topic Task			Topic Tests				Total	End of Term Test	Term Mark	Weighted Term Mark	DNEA Grade 10
		1	2	Total	1	2	Total	1	2		(40÷2)		(65×2)		200÷2	(400÷40) ×7
	Mark	15	15	30	10	10	20	20	20	40	20	70	130	200	100	70
	1															
	2															
	1															
	2															
	1															
	2															
	1															
	2															
	1															
	2															
	1															
	2															



The National Institute for Educational Development

P/Bag 2034

Okahandja

NAMIBIA

Telephone: +64 62 509000

Facsimile: + 64 62 509073

E-mail: info@nied.edu.na

Website: <http://www.nied.edu.na>

© NIED 2010