



education

Department of Education
REPUBLIC OF SOUTH AFRICA

**National Curriculum Statement
Grades 10 – 12
(General)**

AGRICULTURAL SCIENCES

Department of Education

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HOW TO USE THIS BOOK

This document is a policy document divided into four chapters. It is important for the reader to read and integrate information from the different sections in the document. The content of each chapter is described below.

■ Chapter 1 - Introducing the National Curriculum Statement

This chapter describes the principles and the design features of the National Curriculum Statement Grades 10 – 12 (General). It provides an introduction to the curriculum for the reader.

■ Chapter 2 - Introducing the Subject

This chapter describes the definition, purpose, scope, career links and Learning Outcomes of the subject. It provides an orientation to the Subject Statement.

■ Chapter 3 - Learning Outcomes, Assessment Standards, Content and Contexts

This chapter contains the Assessment Standards for each Learning Outcome, as well as content and contexts for the subject. The Assessment Standards are arranged to assist the reader to see the intended progression from Grade 10 to Grade 12. The Assessment Standards are consequently laid out in double-page spreads. At the end of the chapter is the proposed content and contexts to teach, learn and attain Assessment Standards.

■ Chapter 4 – Assessment

This chapter deals with the generic approach to assessment being suggested by the National Curriculum Statement. At the end of the chapter is a table of subject-specific competence descriptions. Codes, scales and competence descriptions are provided for each grade. The competence descriptions are arranged to demonstrate progression from Grade 10 to Grade 12.

■ Symbols

The following symbols are used to identify Learning Outcomes, Assessment Standards, grades, codes, scales, competence description, and content and contexts.



= Learning Outcome



= Assessment Standard



= Grade



= Code



= Scale



= Competence Description



= Content and Contexts



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ACRONYMS

AgriSA	South African Agricultural Union
AI	Artificial Insemination
AIDS	Acquired Immune Deficiency Syndrome
ARC	Agricultural Research Council
CASS	Continuous Assessment
DNA	Deoxyribonucleic Acid
DO	Developmental Outcome
FET	Further Education and Training
GET	General Education and Training
HIV	Human Immunodeficiency Virus
IKS	Indigenous Knowledge Systems
IPM	Inter-Pest Management
NAFU	National Agricultural Farmers Union
NAMPO	National Maize Producers Organisation
NCS	National Curriculum Statement
NQF	National Qualifications Framework
OBE	Outcomes-Based Education
SAQA	South African Qualifications Authority

CHAPTER 1

INTRODUCING THE NATIONAL CURRICULUM STATEMENT

The adoption of the Constitution of the Republic of South Africa (Act 108 of 1996) provided a basis for curriculum transformation and development in South Africa. The Preamble states that the aims of the Constitution are to:

- heal the divisions of the past and establish a society based on democratic values, social justice and fundamental human rights;
- improve the quality of life of all citizens and free the potential of each person;
- lay the foundations for a democratic and open society in which government is based on the will of the people and every citizen is equally protected by law; and
- build a united and democratic South Africa able to take its rightful place as a sovereign state in the family of nations.

The Constitution further states that ‘everyone has the right ... to further education which the State, through reasonable measures, must make progressively available and accessible’.

The National Curriculum Statement Grades 10 – 12 (General) lays a foundation for the achievement of these goals by stipulating Learning Outcomes and Assessment Standards, and by spelling out the key principles and values that underpin the curriculum.

PRINCIPLES

The National Curriculum Statement Grades 10 – 12 (General) is based on the following principles:

- social transformation;
- outcomes-based education;
- high knowledge and high skills;
- integration and applied competence;
- progression;
- articulation and portability;
- human rights, inclusivity, environmental and social justice;
- valuing indigenous knowledge systems; and
- credibility, quality and efficiency.

Social transformation

The Constitution of the Republic of South Africa forms the basis for social transformation in our post-apartheid society. The imperative to transform South African society by making use of various transformative tools stems from a need to address the legacy of apartheid in all areas of human activity and in education in particular. Social transformation in education is aimed at ensuring that the educational imbalances of the past are redressed, and that equal educational opportunities are provided for all sections of our population. If social transformation is to be achieved, all South Africans have to be educationally affirmed through the recognition of their potential and the removal of artificial barriers to the attainment of qualifications.

Outcomes-based education

Outcomes-based education (OBE) forms the foundation for the curriculum in South Africa. It strives to enable all learners to reach their maximum learning potential by setting the Learning Outcomes to be achieved by the end of the education process. OBE encourages a learner-centred and activity-based approach to education. The National Curriculum Statement builds its Learning Outcomes for Grades 10 – 12 on the Critical and Developmental Outcomes that were inspired by the Constitution and developed through a democratic process.

The Critical Outcomes require learners to be able to:

- identify and solve problems and make decisions using critical and creative thinking;
- work effectively with others as members of a team, group, organisation and community;
- organise and manage themselves and their activities responsibly and effectively;
- collect, analyse, organise and critically evaluate information;
- communicate effectively using visual, symbolic and/or language skills in various modes;
- use science and technology effectively and critically showing responsibility towards the environment and the health of others; and
- demonstrate an understanding of the world as a set of related systems by recognising that problem solving contexts do not exist in isolation.

The Developmental Outcomes require learners to be able to:

- reflect on and explore a variety of strategies to learn more effectively;
- participate as responsible citizens in the life of local, national and global communities;
- be culturally and aesthetically sensitive across a range of social contexts;
- explore education and career opportunities; and
- develop entrepreneurial opportunities.

High knowledge and high skills

The National Curriculum Statement Grades 10 – 12 (General) aims to develop a high level of knowledge and skills in learners. It sets up high expectations of what all South African learners can achieve. Social justice requires the empowerment of those sections of the population previously disempowered by the lack of knowledge and skills. The National Curriculum Statement specifies the minimum standards of knowledge and skills to be achieved at each grade and sets high, achievable standards in all subjects.

Integration and applied competence

Integration is achieved within and across subjects and fields of learning. The integration of knowledge and skills across subjects and terrains of practice is crucial for achieving applied competence as defined in the National Qualifications Framework. Applied competence aims at integrating three discrete competences – namely, practical, foundational and reflective competences. In adopting integration and applied competence, the National Curriculum Statement Grades 10 – 12 (General) seeks to promote an integrated learning of theory, practice and reflection.

Progression

Progression refers to the process of developing more advanced and complex knowledge and skills. The Subject Statements show progression from one grade to another. Each Learning Outcome is followed by an explicit statement of what level of performance is expected for the outcome. Assessment Standards are arranged in a format that shows an increased level of expected performance per grade. The content and context of each grade will also show progression from simple to complex.

Articulation and portability

Articulation refers to the relationship between qualifications in different National Qualifications Framework levels or bands in ways that promote access from one qualification to another. This is especially important for qualifications falling within the same learning pathway. Given that the Further Education and Training band is nested between the General Education and Training and the Higher Education bands, it is vital that the Further Education and Training Certificate (General) articulates with the General Education and Training Certificate and with qualifications in similar learning pathways of Higher Education. In order to achieve this articulation, the development of each Subject Statement included a close scrutiny of the exit level expectations in the General Education and Training Learning Areas, and of the learning assumed to be in place at the entrance levels of cognate disciplines in Higher Education.

Portability refers to the extent to which parts of a qualification (subjects or unit standards) are transferable to another qualification in a different learning pathway of the same National Qualifications Framework band. For purposes of enhancing the portability of subjects obtained in Grades 10 – 12, various mechanisms have been explored, for example, regarding a subject as a 20-credit unit standard. Subjects contained in the National Curriculum Statement Grades 10 – 12 (General) compare with appropriate unit standards registered on the National Qualifications Framework.

Human rights, inclusivity, environmental and social justice

The National Curriculum Statement Grades 10 – 12 (General) seeks to promote human rights, inclusivity, environmental and social justice. All newly-developed Subject Statements are infused with the principles and practices of social and environmental justice and human rights as defined in the Constitution of the Republic of South Africa. In particular, the National Curriculum Statement Grades 10 – 12 (General) is sensitive to issues of diversity such as poverty, inequality, race, gender, language, age, disability and other factors.

The National Curriculum Statement Grades 10 – 12 (General) adopts an inclusive approach by specifying minimum requirements for all learners. It acknowledges that all learners should be able to develop to their full potential provided they receive the necessary support. The intellectual, social, emotional, spiritual and physical needs of learners will be addressed through the design and development of appropriate Learning Programmes and through the use of appropriate assessment instruments.

Valuing indigenous knowledge systems

In the 1960s, the theory of multiple-intelligences forced educationists to recognise that there were many ways of processing information to make sense of the world, and that, if one were to define intelligence anew, one would have to take these different approaches into account. Up until then the Western world had only valued logical, mathematical and specific linguistic abilities, and rated people as ‘intelligent’ only if they were adept in these ways. Now people recognise the wide diversity of knowledge systems through which people make sense of and attach meaning to the world in which they live. Indigenous knowledge systems in the South African context refer to a body of knowledge embedded in African philosophical thinking and social practices that have evolved over thousands of years. The National Curriculum Statement Grades 10 – 12 (General) has infused indigenous knowledge systems into the Subject Statements. It acknowledges the rich history and heritage of this country as important contributors to nurturing the values contained in the Constitution. As many different perspectives as possible have been included to assist problem solving in all fields.

Credibility, quality and efficiency

The National Curriculum Statement Grades 10 – 12 (General) aims to achieve credibility through pursuing a transformational agenda and through providing an education that is comparable in quality, breadth and depth to those of other countries. Quality assurance is to be regulated by the requirements of the South African Qualifications Authority Act (Act 58 of 1995), the Education and Training Quality Assurance Regulations, and the General and Further Education and Training Quality Assurance Act (Act 58 of 2001).

THE KIND OF LEARNER THAT IS ENVISAGED

Of vital importance to our development as people are the values that give meaning to our personal spiritual and intellectual journeys. *The Manifesto on Values, Education and Democracy* (Department of Education, 2001:9-10) states the following about education and values:

Values and morality give meaning to our individual and social relationships. They are the common currencies that help make life more meaningful than might otherwise have been. An education system does not exist to simply serve a market, important as that may be for economic growth and material prosperity. Its primary purpose must be to enrich the individual and, by extension, the broader society.

The kind of learner that is envisaged is one who will be imbued with the values and act in the interests of a society based on respect for democracy, equality, human dignity and social justice as promoted in the Constitution.

The learner emerging from the Further Education and Training band must also demonstrate achievement of the Critical and Developmental Outcomes listed earlier in this document. Subjects in the Fundamental Learning Component collectively promote the achievement of the Critical and Developmental Outcomes, while specific subjects in the Core and Elective Components individually promote the achievement of particular Critical and Developmental Outcomes.

In addition to the above, learners emerging from the Further Education and Training band must:

- have access to, and succeed in, lifelong education and training of good quality;
- demonstrate an ability to think logically and analytically, as well as holistically and laterally; and
- be able to transfer skills from familiar to unfamiliar situations.

THE KIND OF TEACHER THAT IS ENVISAGED

All teachers and other educators are key contributors to the transformation of education in South Africa. The National Curriculum Statement Grades 10 – 12 (General) visualises teachers who are qualified, competent, dedicated and caring. They will be able to fulfil the various roles outlined in the Norms and Standards for Educators. These include being mediators of learning, interpreters and designers of Learning Programmes and materials, leaders, administrators and managers, scholars, researchers and lifelong learners, community members, citizens and pastors, assessors, and subject specialists.

STRUCTURE AND DESIGN FEATURES

Structure of the National Curriculum Statement

The National Curriculum Statement Grades 10 – 12 (General) consists of an Overview Document, the Qualifications and Assessment Policy Framework, and the Subject Statements.

The subjects in the National Curriculum Statement Grades 10 – 12 (General) are categorised into Learning Fields.

What is a Learning Field?

A Learning Field is a category that serves as a home for cognate subjects, and that facilitates the formulation of rules of combination for the Further Education and Training Certificate (General). The demarcations of the Learning Fields for Grades 10 – 12 took cognisance of articulation with the General Education and Training and Higher Education bands, as well as with classification schemes in other countries.

Although the development of the National Curriculum Statement Grades 10 – 12 (General) has taken the twelve National Qualifications Framework organising fields as its point of departure, it should be emphasised that those organising fields are not necessarily Learning Fields or ‘knowledge’ fields, but rather are linked to occupational categories.

The following subject groupings were demarcated into Learning Fields to help with learner subject combinations:

- Languages (Fundamentals);
- Arts and Culture;
- Business, Commerce, Management and Service Studies;
- Manufacturing, Engineering and Technology;
- Human and Social Sciences and Languages; and
- Physical, Mathematical, Computer, Life and Agricultural Sciences.

What is a subject?

Historically, a subject has been defined as a specific body of academic knowledge. This understanding of a subject laid emphasis on knowledge at the expense of skills, values and attitudes. Subjects were viewed by some as static and unchanging, with rigid boundaries. Very often, subjects mainly emphasised Western contributions to knowledge.

In an outcomes-based curriculum like the National Curriculum Statement Grades 10 – 12 (General), subject boundaries are blurred. Knowledge integrates theory, skills and values. Subjects are viewed as dynamic, always responding to new and diverse knowledge, including knowledge that traditionally has been excluded from the formal curriculum.

A subject in an outcomes-based curriculum is broadly defined by Learning Outcomes, and not only by its body of content. In the South African context, the Learning Outcomes should, by design, lead to the achievement of the Critical and Developmental Outcomes. Learning Outcomes are defined in broad terms and are flexible, making allowances for the inclusion of local inputs.

What is a Learning Outcome?

A Learning Outcome is a statement of an intended result of learning and teaching. It describes knowledge, skills and values that learners should acquire by the end of the Further Education and Training band.

What is an Assessment Standard?

Assessment Standards are criteria that collectively describe what a learner should know and be able to demonstrate at a specific grade. They embody the knowledge, skills and values required to achieve the Learning Outcomes. Assessment Standards within each Learning Outcome collectively show how conceptual progression occurs from grade to grade.

Contents of Subject Statements

Each Subject Statement consists of four chapters and a glossary:

- *Chapter 1, Introducing the National Curriculum Statement:* This generic chapter introduces the National Curriculum Statement Grades 10 – 12 (General).
- *Chapter 2, Introducing the Subject:* This chapter introduces the key features of the subject. It consists of a definition of the subject, its purpose, scope, educational and career links, and Learning Outcomes.
- *Chapter 3, Learning Outcomes, Assessment Standards, Content and Contexts:* This chapter contains Learning Outcomes with their associated Assessment Standards, as well as content and contexts for attaining the Assessment Standards.
- *Chapter 4, Assessment:* This chapter outlines principles for assessment and makes suggestions for recording and reporting on assessment. It also lists subject-specific competence descriptions.
- *Glossary:* Where appropriate, a list of selected general and subject-specific terms are briefly defined.

LEARNING PROGRAMME GUIDELINES

A Learning Programme specifies the scope of learning and assessment for the three grades in the Further Education and Training band. It is the plan that ensures that learners achieve the Learning Outcomes as prescribed by the Assessment Standards for a particular grade. The Learning Programme Guidelines assist teachers and other Learning Programme developers to plan and design quality learning, teaching and assessment programmes.

CHAPTER 2

AGRICULTURAL SCIENCES

DEFINITION

Agricultural Sciences is the study of the relationship between soils, plants and animals in the production and processing of food, fibre, fuel and any other agricultural commodities that have an economic, aesthetic and cultural value. It is an integrated science that combines the knowledge and skills from Physical Sciences, Life Sciences, Social Sciences, Earth Sciences, Engineering, Mathematics and Economics. This subject must be seen within the holistic science framework rather than as an isolated science. The subject Agricultural Sciences seeks to inculcate an understanding of a sustainable agricultural environment through integrating theory and skills in the study of the food production chain and of processing. It focuses on the management skills needed to sustain production in a viable manner.

PURPOSE

Through the study of Agricultural Sciences, learners will:

- develop awareness of national priorities such as food security, sustainable livelihoods and the alleviation of poverty, considering both subsistence and commercial farming practices, as well as cultural, aesthetic and ethical issues within plant and animal production;
- develop an awareness of the management and care of the environment, natural resources and the humane treatment of animals through application of science and related appropriate technology, with responsibility towards the environment and for the health and well-being of all in South Africa;
- develop problem-solving mechanisms within the contexts of agricultural production, processing and marketing practices;
- be aware of the social and economic development of the society at large through personal development in commercial and subsistence farming enterprises by communicating, by working effectively in groups, and by being creative and innovative;
- become informed and responsible citizens (knowledge and skills) in the production of agricultural commodities (while managing natural resources), caring for the environment (attitudes and values) and addressing social justice issues;
- be aware of agricultural indigenous knowledge and practices through understanding agricultural science in historical and social contexts;
- develop an awareness of gender inequity and other imbalances that exist in the agricultural industry, encouraging meaningful participation of female learners and learners with special educational needs;
- develop social and personal skills through understanding ethical and responsible agricultural practices in the production and processing of food and fibre and caring for crops and animals; and
- acquire value through having access and the opportunity to succeed in lifelong education and training.

SCOPE

The scope of Agricultural Sciences is broad and has many areas of interest. In the Further Education and Training band, this subject covers a broad spectrum of agricultural issues, many of which develop into specialised programmes in the Higher Education band. The knowledge, skills, attitudes and values acquired in this subject enables learners to understand the production and processing of food and fibre, and the caring for crops and animals. It also enables them to develop social and personal skills in the management of agriculture, so as to ensure the creation of the correct environment for sustainable agriculture.

Agricultural Sciences consists of:

- soil science (components, forming, characteristics, organic matter, chemical and colloidal characteristics, classification and soil microbiology);
- plant science (nutrition, reproduction and propagation, breeding, protection and classification);
- animal science (nutrition, reproduction and propagation, breeding, protection and classification);
- agricultural economics;
- basic chemistry;
- basic biological concepts;
- sustainable natural resource utilisation; and
- management of the environment.

Agricultural Sciences focuses on the study of:

- biological productivity through maintaining and/or improving production and diversity in both plant and animal production lines;
- economic viability;
- conservation of agricultural resources (soil, water and natural vegetation) and management of the environment;
- social responsibility by identifying and addressing social and economic justice issues such as food security;
- risk management by identifying and minimising plant and animal production risks.

Agricultural Sciences should take into account the historical context of agriculture in South Africa and the need for rural food security, redress and equity. The subject Agricultural Sciences operates within the broader context of transformative legislation and policies such as those related to the environment, labour, land redistribution and other relevant provisions.

EDUCATIONAL AND CAREER LINKS

Agricultural Sciences links with the General Education and Training band Learning Areas of Technology, Natural Sciences, Mathematics, Social Sciences, and Economic and Management Sciences.

By studying Agricultural Sciences in the Further Education and Training band, learners develop entrepreneurial skills, and therefore can proceed into Higher Education or go into farming practice using the skills acquired to contribute to the local economy. The subject can lead to the following Higher Education qualifications: Veterinary Medicine, Geology, Agricultural Engineering, Management Sciences, Life and Physical Sciences, Food Science, Food Technology or Food Engineering, Consumer Science, Human Nutrition, Environmental and Natural Resource Management, Dietetics and Rural Development. It leads to careers in farming, horticulture, agricultural teaching, extension officer in agriculture, marketing services and the agricultural business, applying entrepreneurial skills.

Subjects like Physical Sciences, Earth Sciences, Social Sciences, Life Sciences, Mathematics and Economics augment the knowledge, skills, attitudes and values developed within Agricultural Sciences.

LEARNING OUTCOMES



Learning Outcome 1: Investigate and Analyse

The learner is able to investigate, critically analyse and understand the challenging nature of agriculture in order to plan and solve problems relating to sustainable agriculture.

The focus of this Learning Outcome is to address the various skills needed to access, process and use information in order to meet the challenges of maintaining the balance between agriculture and the environment. It involves the knowledge and skills necessary to handle basic agricultural machinery and equipment so as to solve agricultural problems in a sustainable way.

Grade 10

Learners are able to handle basic agricultural machinery and equipment safely and efficiently, and to explore the use of agricultural equipment and technology to explain how to obtain an optimum yield without disturbing the ecological balance.

Grade 11

Learners are able to use the knowledge and skills of handling agricultural machinery, equipment and technology to meet the challenges of problems related to agriculture. They are beginning to anticipate problems and, with guidance, can work out solutions.

Grade 12

Learners are able to use the knowledge and skills of handling agricultural machinery, equipment and technology to meet the challenges of a wide range of problems related to agriculture. They are able, independently or in groups, to hypothesise and predict problems as well as to find ecologically sustainable solutions.



Learning Outcome 2: Sustainable Agricultural Practices

The learner is able to demonstrate an understanding of the dynamic nature of agricultural knowledge and of the appropriate technology, and to interpret and apply this knowledge to agricultural management practices and systems to ensure a sustainable agricultural environment.

This Learning Outcome addresses the dynamic nature of agriculture that learners must understand in order to apply relevant production, processing and marketing practices to sustain production in a manner that does not destroy the environment.

Grade 10

Learners are able to understand and explain the role of ecology and its influence on production, as well as basic agricultural concepts in soil, animal and plant production. They can discuss the role of organised agriculture in the South African context, can understand, explain the contexts of the ecological regions of the world and of South Africa in particular.

Grade 11

Learners are able to understand and explain all relevant aspects of soil in the production process of crops as well as factors that influence crop production. They can discuss and analyse the impact of weather and population shift on agricultural production, and on the use of natural and agricultural resources for optimum production.

Grade 12

Learners are able to understand and explain the aspects of animal science that influence animal production, management practices, and the use of entrepreneurial skills in the agricultural environment.



Learning Outcome 3: Indigenous Agricultural Knowledge and Historical Development

The learner is able to understand and interpret socio-cultural developments in agriculture over time, and to use indigenous agricultural knowledge in relevant management practices, systems and technologies.

The focus of this Learning Outcome is on the changes in agricultural practice that have occurred and, in particular, on the understanding of indigenous agricultural knowledge in order to incorporate all relevant practices, systems and technologies in managing a sustainable agricultural environment.

Grade 10

Learners are able to understand and interpret the nature of agriculture in South Africa and the role that agricultural industries play in providing economic stability in the country's agricultural practices.

Grade 11

Learners are able to describe the changes that have taken place in agricultural practice over time, as well as explain the indigenous agricultural knowledge that has influenced production practices. They become aware of the need to use natural resources in a sustainable manner and can outline the issues involved in sustainability, explaining the ways in which various agricultural practices have affected natural resources in the past.

Grade 12

Learners are able to understand and explain the agricultural labour market and the reasons for the continual development of agricultural commodities to maintain sustainable development. They become aware of and can explain the changing patterns of agricultural practices as well as the labour issues involved in the different practices.



Learning Outcome 4: Interrelated Issues in Agriculture

The learner is able to demonstrate an understanding of the links between humans and nature and the impact of socio-economic and political issues on natural resources and on sustainable agricultural production.

Learners need to be sensitive towards their natural environment and understand the effects of human decisions resulting from socio-economic and political conditions which have an impact on the environment and on sustainable agricultural production.

Grade 10

Learners are able to understand and explain the role of legislation on agricultural resources. They can also describe the impact of diseases on agricultural production.

Grade 11

Learners are able to understand and explain the importance of conducting agricultural practices in an ethical and cultural manner, valuing inclusivity and human rights. They are able to analyse the impact of global agriculture on local production and to discuss the influence of poverty, wealth and legislation on agricultural practices.

Grade 12

Learners are able to understand and explain the importance of having equitable access to agricultural resources, and to interpret legislation for the utilisation of agricultural resources in order to sustain agricultural practice in a responsible manner.

CHAPTER 3

LEARNING OUTCOMES, ASSESSMENT STANDARDS, CONTENT AND CONTEXTS

Note: The Learning Outcomes and Assessment Standards should be read together with the list of Agricultural Sciences content that appears at the end of this chapter.

Grade 10



Learning Outcome 1

Investigate and Analyse

The learner is able to investigate, critically analyse and understand the challenging nature of agriculture in order to plan and solve problems relating to sustainable agriculture.



Assessment Standards

We know this when the learner is able to:

- Plan and investigate certain aspects related to agriculture.
- Collect, organise, process and evaluate this collected information in order to solve problems through responsible decision-making using effective communication.
- Show capability in the responsible handling and use of basic agricultural equipment according to relevant safety legislation.

Grade 11



Assessment Standards

We know this when the learner is able to:

- Plan and investigate production aspects related to agriculture.
- Collect, organise, process, analyse and evaluate this collected production information in order to solve problems through responsible decision-making using effective communication.
- Demonstrate responsible handling and use of agricultural equipment according to relevant safety legislation.
- Use information communication technology skills related to agricultural production practices.

Grade 12



Assessment Standards

We know this when the learner is able to:

- Plan and investigate processing and marketing aspects related to agriculture.
- Collect, organise, process, analyse and evaluate this collected processing and marketing information in order to hypothesise and solve problems through responsible decision-making using effective communication.
- Demonstrate responsible handling and use of agricultural equipment according to relevant safety legislation.



Learning Outcome 2

Sustainable Agricultural Practices

The learner is able to demonstrate an understanding of the dynamic nature of agricultural knowledge and of the appropriate technology, and to interpret and apply this knowledge to agricultural management practices and systems to ensure a sustainable agricultural environment.



Assessment Standards

We know this when the learner is able to:

- Understand and explain the origin of soils and their importance as the primary factor for production and development.
- Know and distinguish between the different plant groups of crops in South Africa, and the main areas of production.
- Identify and describe selected ecological regions in the world.
- Know and distinguish between the different animal groupings and breeds in South Africa, and the main areas of production.
- Know and describe different veld types and their impact on agricultural production.

Grade 11



Assessment Standards

We know this when the learner is able to:

- Investigate, identify and explain soil forming and agricultural production processes.
- Investigate, identify and explain the nutritional, reproductive and protection components required for crop/plant production.
- Identify and describe the effect and impact of weather phenomena on optimal resource utilisation.
- Identify and analyse the production factors in agricultural production.
- Investigate and explain sustainable use of agricultural resources to obtain optimum production using different agricultural systems.

Grade 12



Assessment Standards

We know this when the learner is able to:

- Investigate, identify and analyse animal nutritional, reproductive and protection components for animal production.
- Know and describe animal behaviour patterns and husbandry practices.
- Investigate, identify and explain the methods used to increase agricultural production.
- Investigate, identify and explain the nutritional, reproductive and protection components required for animal production.
- Investigate, understand and explain agricultural management practices.
- Investigate, identify, select and explain breeding and selection principles for effective plant/crop and animal production.
- Recognise and analyse a sustainable agricultural enterprise where the system, management and practice do not impact negatively on the environment.



**Learning Outcome 2
Continued**

Sustainable Agricultural Practices

The learner is able to demonstrate an understanding of the dynamic nature of agricultural knowledge and of the appropriate technology, and to interpret and apply this knowledge to agricultural management practices and systems to ensure a sustainable agricultural environment.



Assessment Standards

We know this when the learner is able to:

- Categorise and describe how agricultural knowledge is contested in different contexts.

Grade 11



Assessment Standards

We know this when the learner is able to:

- Categorise and analyse how agricultural knowledge is contested in various contexts.
- Understand and apply appropriate technology to specific agricultural practices.

Grade 12



Assessment Standards

We know this when the learner is able to:

- Interpret, categorise and analyse the contested nature of agricultural knowledge in different fields.
- Understand and explain the processing of various agricultural products (local and global) for marketing purposes.
- Select and develop own entrepreneurial skills and explain how they will contribute to the socio-economic environment.



Learning Outcome 3

Indigenous Agricultural Knowledge and Historical Development

The learner is able to understand and interpret socio-cultural developments in agriculture over time, and to use indigenous agricultural knowledge in relevant management practices, systems and technologies.



Assessment Standards

We know this when the learner is able to:

- Understand and describe the indigenous practices of agriculture.

- Understand and describe how these practices help provide economic stability as well as food, raw materials, jobs and economic stability in primary and secondary farming practices.

- Describe how agricultural practices have changed over time.

Grade 11



Assessment Standards

We know this when the learner is able to:

- Understand and explain the role that agricultural developments play in promoting the use of relevant indigenous knowledge in South Africa.
- Understand and analyse the reasons for different production practices and systems ranging from subsistence to commercial agriculture.
- Understand the effective and appropriate use of agricultural resources to obtain optimum production.
- Analyse the changes in agricultural systems, management and practices over time.

Grade 12



Assessment Standards

We know this when the learner is able to:

- Analyse and evaluate indigenous agricultural knowledge and describe its contribution to agricultural enterprises.
- Investigate and analyse the importance of continual development of agricultural commodities to meet the increasing food demands of a growing population.
- Understand and analyse labour relations in the agricultural sector and explain the need for ethical and fair labour practice in sustainable agricultural enterprises.
- Analyse and evaluate the reasons for changes in agricultural practices over time.



Learning Outcome 4

Interrelated Issues in Agriculture

The learner is able to demonstrate an understanding of the links between human and nature and the impact of socio-economic and political issues on natural resources and on sustainable agricultural production.



Assessment Standards

We know this when the learner is able to:

- Identify and describe the importance of optimising the utilisation of agricultural resources.
- Investigate and describe the socio-economic impact of HIV/AIDS and other human diseases on the agricultural industry.
- Understand and explain the impact of global agriculture on local production.
- Analyse and describe the value of a healthy environment and ecosystem for the healthy functioning of a democratic, productive society
- Describe the impact of agricultural practices on socio-economic factors.

Grade 11



Assessment Standards

We know this when the learner is able to:

- Understand and analyse the impact of ethical and cultural values on agricultural practices and the reasons for these different production practices and systems.
- Recognise and analyse the impact of malnutrition on the health of people and describe the importance of sustainable agricultural production in combating under-nourishment.
- Understand and analyse the impact of global agriculture on local production.
- Understand and analyse the relationship between human rights, inclusivity, a healthy environment and social justice in sustainable agricultural production.
- Demonstrate responsible interpretation of legislation on natural resource utilisation.

Grade 12



Assessment Standards

We know this when the learner is able to:

- Understand and explain equitable access to agricultural resources as outlined by agricultural and related practices.
- Understand and explain the ethical and cultural differences in processing and marketing agricultural commodities.
- Analyse and evaluate the impact on the environment of human actions and decisions, both socio-cultural and political.
- Understand and analyse the impact of legislation on local and global agricultural production and marketing.



CONTENT AND CONTEXTS FOR THE ATTAINMENT OF ASSESSMENT STANDARDS

In this section content and contexts are provided to support the attainment of the Assessment Standards. The content indicated needs to be dealt with in such a way as to assist the learner to progress towards the achievement of the Learning Outcomes. Content must serve the Learning Outcomes and not be an end in itself. The contexts suggested will enable the content to be embedded in situations which are meaningful to the learner and so assist learning and teaching. The teacher should be aware of and use local contexts, not necessarily indicated here, which could be more suited to the experiences of the learner. Content and context, when aligned to the attainment of the Assessment Standards, provide a framework for the development of Learning Programmes. The Learning Programme Guidelines give more detail in this respect.

Agricultural Sciences content

Grade 10

Agro-ecology

- Ecological regions of the world: outline of various regions.
- Ecological regions in South Africa: geographical distribution and veld types.
- Adaptations to ecosystems:
 - adaptations of animals to specific regions;
 - effect of weather phenomena (e.g. El Niño).
- Veld management:
 - foundation of the livestock industry;
 - principles of utilisation.

Agri-industry

- Key importance: provider of food, raw materials, jobs, economic stability.
- Demand for foodstuffs: determined by natural resources.
- Overview of agricultural development:
 - population growth and shift;
 - land redistribution and development;
 - land ownership;
 - industries;
 - indigenous knowledge.
- Organisations in the farming industry: roles and examples.
- Agricultural legislation: water, soil conservation.

Soil science

- Basic and components:
 - components;
 - rock minerals (primary and secondary).
- Soil forming factors and process:
 - geographical factors;
 - climate;
 - biological factors;
 - weathering of rocks.

Animal sciences

- General classification, importance and economic value of animals:
 - beef;
 - dairy;
 - sheep;
 - pigs;
 - goats;
 - horses;
 - chickens.

Plant sciences

- General classification, importance and economic value of plants:
 - field crops;
 - horticultural crops;
 - fodder crops;
 - forests (wood production).

Optimum resource utilisation

- Agricultural resources:
 - soil and water control and conservation;
 - water quality;
 - agricultural pollution;
 - soil degradation.

Biological concepts

- An overview of the cell and its components and properties.
- The cell division process and why it is necessary.

Grade 11

Basic chemistry

- Compounds:
 - overview of the general atomic structures of the compounds most important to agriculture;
 - formation of simple and organic compounds.

Soil science

- Profile and characteristics:
 - physical and morphological characteristics (e.g. texture, structure, colour, air, temperature, moisture, soil pores);
- Chemical and colloidal properties:
 - inorganic and organic;
 - adsorption and exchange;
 - acidity, alkalinity and salinity (danger and reclamation);
 - organic matter and its importance.
- Soil microbiology: importance and role in agriculture.
- Soil classification: necessity and principles.

Plant science

- Plant nutrition:
 - role of photosynthesis;
 - absorption and storage of water and nutrients.
- Mineral nutrition:
 - fertilisation practices;
 - availability of nutrients and essential minerals;
 - organic and inorganic fertilisers;
 - nutritional elements and analysis.
- Reproduction:
 - plant improvement;
 - methods of asexual and sexual reproduction;
 - pollination.

- Protection:
 - weed control;
 - plant pest and diseases and their control (inter-pest management control, IPM);
 - insect control in seed and grass;
 - the role of the state in protection.

Optimum resource utilisation

- Soil surveying and planning: aims and principles, leading to precision farming.
- Water use:
 - irrigation;
 - scheduling of irrigation;
 - drainage.
- Soil cultivation: aims and methods (e.g. mulching, bare soil).
- Crop rotation: the concept.
- Controlled agricultural production:
 - greenhouse;
 - hydroponics;
 - tunnels;
 - aquaculture;
 - other.

Grade 12

Animal sciences

- Nutrition:
 - alimentary canal and digestion;
 - components and digestibility of feed;
 - biological value of feed;
 - energy value of feed;
 - types of feed;
 - supplements;
 - planning a feeding programme (Pearson square, principles of a fodder flow programme).
- Production:
 - increasing production;
 - shelter;
 - handling of farm animals;
 - behaviour of farm animals.
- Reproduction:
 - reproductive organs (male and female);

- parturition;
- artificial insemination (AI);
- embryo;
- milk production.
- Protection and control:
 - diseases (viral, fungal, metabolic, bacterial, protozoal);
 - pests.

Agricultural management

- Marketing:
 - price determination;
 - the market;
 - methods of marketing.
- Entrepreneurship: business planning.
- Production factors and management:
 - soil;
 - labour;
 - capital;
 - the management process.

Basic agricultural genetics

- Heredity, selection, variation and breeding:
 - mechanisms;
 - monohybridism and dihybridism;
 - Mendel's law;
 - segregation and independent recombination of characteristics.
- Plants and animals.
- Growth and genetic manipulation: genetically modified crops and their purpose.

CHAPTER 4

ASSESSMENT

INTRODUCTION

Assessment is a critical element of the National Curriculum Statement Grades 10 – 12 (General). It is a process of collecting and interpreting evidence in order to determine the learner's progress in learning and to make a judgement about a learner's performance. Evidence can be collected at different times and places, and with the use of various methods, instruments, modes and media.

To ensure that assessment results can be accessed and used for various purposes at a future date, the results have to be recorded. There are various approaches to recording learners' performances. Some of these are explored in this chapter. Others are dealt with in a more subject-specific manner in the Learning Programme Guidelines.

Many stakeholders have an interest in how learners perform in Grades 10 – 12. These include the learners themselves, parents, guardians, sponsors, provincial departments of education, the Department of Education, the Ministry of Education, employers, and higher education and training institutions. In order to facilitate access to learners' overall performances and to inferences on learners' competences, assessment results have to be reported. There are many ways of reporting. The Learning Programme Guidelines and the Assessment Guidelines discuss ways of recording and reporting on school-based and external assessment as well as giving guidance on assessment issues specific to the subject.

WHY ASSESS

Before a teacher assesses learners, it is crucial that the purposes of the assessment be clear and unambiguous. Understanding the purposes of assessment ensures that an appropriate match exists between the purposes and the methods of assessment. This, in turn, will help to ensure that decisions and conclusions based on the assessment are fair and appropriate for the particular purpose or purposes.

There are many reasons why learners' performance is assessed. These include monitoring progress and providing feedback, diagnosing or remediating barriers to learning, selection, guidance, supporting learning, certification and promotion.

In this curriculum, learning and assessment are very closely linked. Assessment helps learners to gauge the value of their learning. It gives them information about their own progress and enables them to take control of and to make decisions about their learning. In this sense, assessment provides information about whether teaching and learning is succeeding in getting closer to the specified Learning Outcomes. When assessment indicates lack of progress, teaching and learning plans should be changed accordingly.

TYPES OF ASSESSMENT

This section discusses the following types of assessment:

- baseline assessment;
- diagnostic assessment;
- formative assessment; and
- summative assessment.

Baseline assessment

Baseline assessment is important at the start of a grade, but can occur at the beginning of any learning cycle. It is used to establish what learners already know and can do. It helps in the planning of activities and in Learning Programme development. The recording of baseline assessment is usually informal.

Diagnostic assessment

Any assessment can be used for diagnostic purposes – that is, to discover the cause or causes of a learning barrier. Diagnostic assessment assists in deciding on support strategies or identifying the need for professional help or remediation. It acts as a checkpoint to help redefine the Learning Programme goals, or to discover what learning has not taken place so as to put intervention strategies in place.

Formative assessment

Any form of assessment that is used to give feedback to the learner is fulfilling a formative purpose. Formative assessment is a crucial element of teaching and learning. It monitors and supports the learning process. All stakeholders use this type of assessment to acquire information on the progress of learners. Constructive feedback is a vital component of assessment for formative purposes.

Summative assessment

When assessment is used to record a judgement of the competence or performance of the learner, it serves a summative purpose. Summative assessment gives a picture of a learner's competence or progress at any specific moment. It can occur at the end of a single learning activity, a unit, cycle, term, semester or year of learning. Summative assessment should be planned and a variety of assessment instruments and strategies should be used to enable learners to demonstrate competence.

WHAT SHOULD ASSESSMENT BE AND DO?

Assessment should:

- be understood by the learner and by the broader public;
- be clearly focused;
- be integrated with teaching and learning;
- be based on the pre-set criteria of the Assessment Standards;
- allow for expanded opportunities for learners;
- be learner-paced and fair; and
- be flexible;
- use a variety of instruments;
- use a variety of methods.

HOW TO ASSESS

Teachers' assessment of learners' performances must have a great degree of reliability. This means that teachers' judgements of learners' competences should be generalisable across different times, assessment items and markers. The judgements made through assessment should also show a great degree of validity; that is, they should be made on the aspects of learning that were assessed.

Because each assessment cannot be totally valid or reliable by itself, decisions on learner progress must be based on more than one assessment. This is the principle behind continuous assessment (CASS). Continuous assessment is a strategy that bases decisions about learning on a range of different assessment activities and events that happen at different times throughout the learning process. It involves assessment activities that are spread throughout the year, using various kinds of assessment instruments and methods such as tests, examinations, projects and assignments. Oral, written and performance assessments are included. The different pieces of evidence that learners produce as part of the continuous assessment process can be included in a portfolio. Different subjects have different requirements for what should be included in the portfolio. The Learning Programme Guidelines discuss these requirements further.

Continuous assessment is both classroom-based and school-based, and focuses on the ongoing manner in which assessment is integrated into the process of teaching and learning. Teachers get to know their learners through their day-to-day teaching, questioning, observation, and through interacting with the learners and watching them interact with one another.

Continuous assessment should be applied both to sections of the curriculum that are best assessed through written tests and assignments and those that are best assessed through other methods, such as by performance, using practical or spoken evidence of learning.

METHODS OF ASSESSMENT

Self-assessment

All Learning Outcomes and Assessment Standards are transparent. Learners know what is expected of them. Learners can, therefore, play an important part, through self-assessment, in ‘pre-assessing’ work before the teacher does the final assessment. Reflection on one’s own learning is a vital component of learning.

Peer assessment

Peer assessment, using a checklist or rubric, helps both the learners whose work is being assessed and the learners who are doing the assessment. The sharing of the criteria for assessment empowers learners to evaluate their own and others’ performances.

Group assessment

The ability to work effectively in groups is one of the Critical Outcomes. Assessing group work involves looking for evidence that the group of learners co-operate, assist one another, divide work, and combine individual contributions into a single composite assessable product. Group assessment looks at process as well as product. It involves assessing social skills, time management, resource management and group dynamics, as well as the output of the group.

METHODS OF COLLECTING ASSESSMENT EVIDENCE

There are various methods of collecting evidence. Some of these are discussed below.

Observation-based assessment

Observation-based assessment methods tend to be less structured and allow the development of a record of different kinds of evidence for different learners at different times. This kind of assessment is often based on tasks that require learners to interact with one another in pursuit of a common solution or product. Observation has to be intentional and should be conducted with the help of an appropriate observation instrument.

Test-based assessment

Test-based assessment is more structured, and enables teachers to gather the same evidence for all learners in

the same way and at the same time. This kind of assessment creates evidence of learning that is verified by a specific score. If used correctly, tests and examinations are an important part of the curriculum because they give good evidence of what has been learned.

Task-based assessment

Task-based or performance assessment methods aim to show whether learners can apply the skills and knowledge they have learned in unfamiliar contexts or in contexts outside of the classroom. Performance assessment also covers the practical components of subjects by determining how learners put theory into practice. The criteria, standards or rules by which the task will be assessed are described in rubrics or task checklists, and help the teacher to use professional judgement to assess each learner's performance.

RECORDING AND REPORTING

Recording and reporting involves the capturing of data collected during assessment so that it can be logically analysed and published in an accurate and understandable way.

Methods of recording

There are different methods of recording. It is often difficult to separate methods of recording from methods of evaluating learners' performances.

The following are examples of different types of recording instruments:

- rating scales;
- task lists or checklists; and
- rubrics.

Each is discussed below.

Rating scales

Rating scales are any marking system where a symbol (such as A or B) or a mark (such as 5/10 or 50%) is defined in detail to link the coded score to a description of the competences that are required to achieve that score. The detail is more important than the coded score in the process of teaching and learning, as it gives learners a much clearer idea of what has been achieved and where and why their learning has fallen short of the target. Traditional marking tended to use rating scales without the descriptive details, making it difficult to have a sense of the learners' strengths and weaknesses in terms of intended outcomes. A six-point scale of achievement is used in the National Curriculum Statement Grades 10 – 12 (General).

Task lists or checklists

Task lists or checklists consist of discrete statements describing the expected performance in a particular task. When a particular statement (criterion) on the checklist can be observed as having been satisfied by a learner during a performance, the statement is ticked off. All the statements that have been ticked off on the list (as criteria that have been met) describe the learner's performance. These checklists are very useful in peer or group assessment activities.

Rubrics

Rubrics are a combination of rating codes and descriptions of standards. They consist of a hierarchy of standards with benchmarks that describe the range of acceptable performance in each code band. Rubrics require teachers to know exactly what is required by the outcome. Rubrics can be holistic, giving a global picture of the standard required, or analytic, giving a clear picture of the distinct features that make up the criteria, or can combine both. The Learning Programme Guidelines give examples of subject-specific rubrics.

To design a rubric, a teacher has to decide the following:

- Which outcomes are being targeted?
- Which Assessment Standards are targeted by the task?
- What kind of evidence should be collected?
- What are the different parts of the performance that will be assessed?
- What different assessment instruments best suit each part of the task (such as the process and the product)?
- What knowledge should be evident?
- What skills should be applied or actions taken?
- What opportunities for expressing personal opinions, values or attitudes arise in the task and which of these should be assessed and how?
- Should one rubric target all the Learning Outcomes and Assessment Standards of the task or does the task need several rubrics?
- How many rubrics are, in fact, needed for the task?

It is crucial that a teacher shares the rubric or rubrics for the task with the learners before they do the required task. The rubric clarifies what both the learning and the performance should focus on. It becomes a powerful tool for self-assessment.

Reporting performance and achievement

Reporting performance and achievement informs all those involved with or interested in the learner's progress. Once the evidence has been collected and interpreted, teachers need to record a learner's achievements. Sufficient summative assessments need to be made so that a report can make a statement about the standard achieved by the learner.

The National Curriculum Statement Grades 10 – 12 (General) adopts a six-point scale of achievement. The scale is shown in Table 4.1.

Table 4.1 Scale of achievement for the National Curriculum Statement Grades 10 – 12 (General)

Rating Code	Description of Competence	Marks (%)
6	Outstanding	80-100
5	Meritorious	60-79
4	Satisfactory	50-59
3	Adequate	40-49
2	Partial	30-39
1	Inadequate	0-29

SUBJECT COMPETENCE DESCRIPTIONS

To assist with benchmarking the achievement of Learning Outcomes in Grades 10 – 12, subject competences have been described to distinguish the grade expectations of what learners must know and be able to achieve. Six levels of competence have been described for each subject for each grade. These descriptions will assist teachers to assess learners and place them in the correct rating. The descriptions summarise the Learning Outcomes and the Assessment Standards, and give the distinguishing features that fix the achievement for a particular rating. The various achievement levels and their corresponding percentage bands are as shown in Table 4.1.

In line with the principles and practice of outcomes-based assessment, all assessment – both school-based and external – should primarily be criterion-referenced. Marks could be used in evaluating specific assessment tasks, but the tasks should be assessed against rubrics instead of simply ticking correct answers and awarding marks in terms of the number of ticks. The statements of competence for a subject describe the minimum skills, knowledge, attitudes and values that a learner should demonstrate for achievement on each level of the rating scale.

When teachers/assessors prepare an assessment task or question, they must ensure that the task or question addresses an aspect of a particular outcome. The relevant Assessment Standard or Standards must be used when creating the rubric for assessing the task or question. The descriptions clearly indicate the minimum level of attainment for each category on the rating scale.

The competence descriptions for this subject appear at the end of this chapter.

PROMOTION

Promotion at Grade 10 and Grade 11 level will be based on internal assessment only, but must be based on the same conditions as those for the Further Education and Training Certificate. The requirements, conditions, and rules of combination and condonation are spelled out in the *Qualifications and Assessment Policy Framework for the Grades 10 – 12 (General)*.

WHAT REPORT CARDS SHOULD LOOK LIKE

There are many ways to structure a report card, but the simpler the report card the better, provided that all important information is included. Report cards should include information about a learner's overall progress, including the following:

- the learning achievement against outcomes;
- the learner's strengths;
- the support needed or provided where relevant;
- constructive feedback commenting on the performance in relation to the learner's previous performance and the requirements of the subject; and
- the learner's developmental progress in learning how to learn.

In addition, report cards should include the following:

- name of school;
- name of learner;
- learner's grade;
- year and term;
- space for signature of parent or guardian;
- signature of teacher and of principal;
- date;
- dates of closing and re-opening of school;
- school stamp; and
- school attendance profile of learner.

ASSESSMENT OF LEARNERS WHO EXPERIENCE BARRIERS TO LEARNING

The assessment of learners who experience any barriers to learning will be conducted in accordance with the recommended alternative and/or adaptive methods as stipulated in the *Qualifications and Assessment Policy Framework for Grades 10 – 12 (General)* as it relates to learners who experience barriers to learning. Refer to *White Paper 6 on Special Needs Education: Building an Inclusive Education and Training System*.

COMPETENCE DESCRIPTIONS

Note:

Because of the difference in content in the various grades, content is not specified in these competence descriptions. Teachers must refer to the specified content for Agricultural Sciences (see the Assessment Standards and the 'Agricultural Sciences Content' in Chapter 3).

Grade 10



Code



Scale

6

80%-100%
Outstanding



Competence Descriptions

By the end of Grade 10 the learner with outstanding achievement can:

- display a thorough understanding of the specified content;
- display critical thinking skills to identify and solve problems;
- participate enthusiastically and independently, applying skills suited to the task.

Grade 11



Cd Competence Descriptions

By the end of Grade 11 the learner with outstanding achievement can:

- expand the skills developed in the previous grade;
- display critical thinking skills to identify and solve problems;
- understand and evaluate the specified content;
- participate enthusiastically, work independently and apply skills suited to the tasks.

Grade 12



Cd Competence Descriptions

By the end of Grade 12 the learner with outstanding achievement can:

- expand the skills developed in the previous grade;
- display critical thinking skills;
- identify and solve problems by evaluating and hypothesising (making conclusions based on evidence);
- display a thorough understanding of the specified content;
- participate enthusiastically and work independently to apply skills suited to the task.

Grade 10



Code

5



Scale

60%-79%
Meritorious



Competence Descriptions

By the end of Grade 10 the learner with meritorious achievement can:

- display a sound understanding of the specified content;
- categorise and analyse information to identify and solve problems;
- participate enthusiastically and independently while applying basic skills.

Grade 11



Competence Descriptions

By the end of Grade 11 the learner with meritorious achievement can:

- expand the skills developed in the previous grade;
- categorise and analyse information;
- identify and solve problems through evaluation and a sound understanding of the specified content;
- participate enthusiastically and work independently while applying relevant skills.

Grade 12



Competence Descriptions

By the end of Grade 12 the learner with meritorious achievement can:

- expand the skills developed in the previous grade;
- categorise and analyse information to identify and solve a number of problems by evaluating and hypothesising (making conclusions based on evidence);
- display a sound understanding of the specified content;
- participate enthusiastically and work independently while applying relevant skills.

Grade 10



Code



Scale

4

50%-59%
Satisfactory



Competence Descriptions

By the end of Grade 10 the learner with satisfactory achievement can:

- display a general understanding of the specified content;
- collect, organise and explain information to identify and solve multi-step problems;
- participate enthusiastically and be able to work under supervision while applying basic skills.

Grade 11



Cd Competence Descriptions

By the end of Grade 11 the learner with satisfactory achievement can:

- expand the skills developed in the previous grade;
- collect, organise and explain information;
- identify and solve multi-step problems through evaluation and a general understanding of the specified content;
- participate enthusiastically and work independently while applying relevant skills.

Grade 12



Cd Competence Descriptions

By the end of Grade 12 the learner with satisfactory achievement can:

- expand the skills developed in the previous grade;
- collect, organise and explain information to identify and solve multi-step problems by evaluating and hypothesising (making conclusions based on evidence);
- display a general understanding of the specified content;
- participate enthusiastically and work independently under supervision while applying relevant skills.

Grade 10



Code

3



Scale

40%-49%
Adequate



Competence Descriptions

By the end of Grade 10 the learner with adequate achievement can:

- list, define and describe concepts or information to identify and solve single-step problems;
- understand and comprehend the basic content;
- achieve the minimum without displaying a particularly negative or positive attitude, while requiring regular supervision to demonstrate basic skills.

Grade 11



Competence Descriptions

By the end of Grade 11 the learner with adequate achievement can:

- expand the skills developed in the previous grade;
- list, define and describe concepts or information used to identify, evaluate and solve single-step problems;
- achieve the minimum without displaying either a negative or a positive attitude;
- demonstrate the required skills but requires regular supervision.

Grade 12



Competence Descriptions

By the end of Grade 12 the learner with adequate achievement can:

- expand the skills developed in the previous grade;
- list, define and describe concepts or information to identify and solve single-step problems through evaluating and hypothesising (making conclusions based on evidence);
- display an understanding of the basic content;
- achieve the minimum without displaying a particularly negative or positive attitude;
- demonstrate the relevant skills but require supervision.

Grade 10



Code



Scale

2

30%-39%
Partial



Competence Descriptions

By the end of Grade 10 the learner with partial achievement can:

- display partial understanding and comprehension of the specified content;
- with difficulty list, define and describe concepts or information and use them to identify and solve problems;
- participate with difficulty, but requires supervision to apply and display a limited range of skills.

Grade 11



Competence Descriptions

By the end of Grade 11 the learner with partial achievement can:

- expand with difficulty the skills developed in the previous grade;
- list, define and describe concepts or information used to identify and solve problems;
- evaluate but with partial understanding and comprehension;
- participate with difficulty;
- apply and display a limited range of required skills but requires supervision.

Grade 12



Competence Descriptions

By the end of Grade 12 the learner with partial achievement can:

- expand the skills developed in the previous grade, but with difficulty;
- list, define and describe concepts or information to identify and solve a problem through evaluation and hypothesising (making conclusions based on evidence);
- show partial understanding and comprehension of the specified content;
- participate and show interest but with difficulty;
- apply and display a limited range of skills but with supervision.

Grade 10



Code



Scale

1

**0%-29%
Inadequate**



Competence Descriptions

By the end of Grade 10 the learner with inadequate achievement can:

- deal with simple concepts;
- make restricted lists, definitions and descriptions;
- display a narrow understanding of information;
- not identify and solve problems;
- participate with difficulty, and with assistance and supervision apply basic skills.

Grade 11



Competence Descriptions

By the end of Grade 11 the learner with inadequate achievement can:

- expand with restriction the skills developed in the previous grade;
- list, define and describe simple concepts;
- display a narrow understanding of information;
- not identify and solve problems;
- participate and show interest with difficulty;
- apply relevant skills but requires assistance and supervision.

Grade 12



Competence Descriptions

By the end of Grade 12 the learner with inadequate achievement can:

- expand the skills developed in the previous grade;
- conceptualise, list, define and describe some concepts;
- display a narrow understanding of information;
- not identify or solve problems through evaluating and hypothesising (making conclusions based on evidence);
- participate and show interest but with difficulty;
- apply relevant skills but with assistance and supervision.

GLOSSARY

abiotic – non-living matter or factors found in the environment (e.g. soil, altitude, slope)

agricultural ecosystem – an ecosystem where agriculture is the main contributor; a closed or confined habitat within an agricultural environment

agronomy – production of crops in a farming enterprise

aquaculture – the production of products using water as the main source of growing medium

biotic – living organisms on the planet Earth (e.g. vegetation, humans, bacteria)

commercial farming – specialised farming enterprise that is capital-intensive and aimed at profit maximisation

crop rotation – production of crops alternatively on the same piece of soil in consecutive seasons

El Niño – a recurring weather phenomenon where ocean temperature rises, resulting in a change of the upper air circulation and changing rainfall patterns all over the world

genetic modification – the manipulation of DNA structures of plants and animals to enhance production

greenhouse – structure (covered in glass or plastic) used to control the environment in order to increase production

herbivore – an animal that utilises plants as its main source of food

horticulture – production of vegetables and flowers

hydroponics – production of crops where soil is not used as the growing medium

hypothesis – a proposed explanation or conclusion based on evidence

indigenous – plants or animals endemic to South Africa

livestock – any animal that is farmed to generate an income or food

optimum production – production that maximises returns on utilised inputs without exploiting resources

organic farming – production of crops and livestock without the use of non-organic chemicals

parturition – the process of giving birth in farm animals

permaculture – permanent agriculture production of combining crops and animals

ruminant – an animal that has a compound stomach (i.e. consisting of four portions of stomach)

subsistence farming – small-scale farming for household consumption

sustainable agriculture – production that avoids exploitation of natural resources while ensuring the maintenance of productivity

tunnel – see **greenhouse**

viticulture – wine production

weathering – process of the breaking down of rocks to form soil over a period of time