



	Curriculum Document			
Curriculum Code	Curriculum Title		Logo	
684301000	Crop Produce Analyst			
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SECTION 1: CURRICULUM SUMMARY

1. Occupational Information

1.1 Associated Occupation

684301: Crop Produce Analyst

1.2 Occupation or Specialisation Addressed by this Curriculum

684301000: Crop Produce Analyst

1.3 Alternative Titles used by Industry

- None

2. Curriculum Information

2.1 Curriculum Structure

This qualification is made up of the following compulsory Knowledge and Practical Skill Modules:

Knowledge Modules:

- 684301000-KM-01, The collection and grading of representative grain and oilseed samples, NQF Level 3, Credits 12
- 684301000-KM-02, Seed sampling in the SA Seed Industry, NQF Level 3, Credits 8
- 684301000-KM-03, South African Seed certification legislation, rules and procedures, NQF Level 4, Credits 24
- 684301000-KM-04, Seed Quality Assessment, NQF Level 5, Credits 16
- 684301000-KM-05, Seed laboratory quality framework and seed testing legislation, NQF Level 5, Credits 8

Total number of credits for Knowledge Modules: 68

Practical Skill Modules:

- 684301000-PM-01, Plan and execute grains and oilseeds sampling and grading processes, NQF Level 3, Credits 16
- 684301000-PM-02, Plan and execute processes for the representative sampling of a seed lot, NQF Level 3, Credits 14
- 684301000-PM-03, Plan and implement administrative processes and inspect registered seed units at various production stages to ensure the maintenance and availability of quality varietal pure seeds for certification, NQF Level 4, Credits 20
- 684301000-PM-04, Perform seed testing processes and procedures to determine the physical and physiological quality of seed, NQF Level 5, Credits 17

- 684301000-PM-05, Apply laboratory quality standards and legislative requirements to ensure accurate, reproducible and reliable seed testing quality outputs and traceability, NQF Level 5, Credits 10

Total number of credits for Practical Skill Modules: 77

This qualification also requires the following Work Experience Modules:

- 684301000-WM-01, Sampled and graded grains and oilseeds, NQF Level 3, Credits 24
- 684301000-WM-02, Sample a range of seed lots, NQF Level 3, Credits 15
- 684301000-WM-03, Administration and inspection procedures of seed unit to ensure varietal pure seeds for certification, NQF Level 4, Credits 30
- 684301000-WM-04, Determine the physical and physiological quality of seed, NQF Level 5, Credits 40
- 684301000-WM-05, Assure laboratory quality standards and legislative compliance, NQF Level 5, Credits 11

Total number of credits for Work Experience Modules: 120

2.2 Entry Requirements

NQF Level 4 with Mathematical Literacy

3. Assessment Quality Partner Information

Name of body: AgriSETA

Address of body: AgriSETA House 529 Belvedere Road Arcadia 0083

Contact person name: QCTO Manager

Contact person work telephone number: (012) 301 5600

4. Part Qualification Curriculum Structure

Part Qualification 1:

Title:

Grain Grader, NQF Level 3, Credits 43

Purpose:

Grain Graders plans and performs grain grading processes during the intake and/or dispatch processes to ensure that grains and oilseeds comply with grading standards and statutory requirements

Applicable Modules (Rules of Combination)

Knowledge Modules:

- 684301000-KM-01, The collection and grading of representative grain and oilseed samples, NQF Level 3, Credits 12

Total number of credits for Knowledge Modules: 12

Practical Skill Modules:

- 684301000-PM-01, Plan and execute grains and oilseeds sampling and grading processes, NQF Level 3, Credits 16

Total number of credits for Practical Skill Modules: 16

This qualification also requires the following Work Experience Modules:

- 684301000-WM-01, Sampled and graded grains and oilseeds, NQF Level 3, Credits 24

Total number of credits for Work Experience Modules: 24

Part Qualification 2:

Title:

Seed Sampler, NQF Level 3, Credits 37

Purpose:

Seed Samplers plans and executes sampling processes to draw, prepare and submit a sample of the required size that accurately represents the composition of the seed lot for testing and analysis by a seed testing laboratory in accordance with International Seed Testing Association (ISTA) rules and Seed Certification and Quality Assurance requirements.

Applicable Modules (Rules of Combination)

Knowledge Modules:

- 684301000-KM-02, Seed sampling in the SA Seed Industry, NQF Level 3, Credits 8

Total number of credits for Knowledge Modules: 8

Practical Skill Modules:

- 684301000-PM-02, Plan and execute processes for the representative sampling of a seed lot, NQF Level 3, Credits 14

Total number of credits for Practical Skill Modules: 14

This qualification also requires the following Work Experience Modules:

- 684301000-WM-02, Sample a range of seed lots, NQF Level 3, Credits 15

Total number of credits for Work Experience Modules: 15

Part Qualification 3:

Title:

Seed Certification Inspector, NQF Level 4, Credits 74

Purpose:

Seed Certification Inspectors plans and implements administrative processes, inspects registered seed units at various production stages in order to preserve the varietal identity and purity of field crop seed varieties in accordance with the Quality Assurance System of the SA Seed Certification Scheme commissioned by the Plant Improvement Act 1976 (Act 53 of 1976) as amended.

Applicable Modules (Rules of Combination)

Knowledge Modules:

- 684301000-KM-03, South African Seed certification legislation, rules and procedures, NQF Level 4, Credits 24

Total number of credits for Knowledge Modules: 24

Practical Skill Modules:

- 684301000-PM-03, Plan and implement administrative processes and inspect registered seed units at various production stages to ensure the maintenance and availability of quality varietal pure seeds for certification, NQF Level 4, Credits 20

Total number of credits for Practical Skill Modules: 20

This qualification also requires the following Work Experience Modules:

- 684301000-WM-03, Administration and inspection procedures of seed unit to ensure varietal pure seeds for certification, NQF Level 4, Credits 30

Total number of credits for Work Experience Modules: 30

Part Qualification 4:

Title:

Seed Analyst, NQF Level 5, Credits 102

Purpose:

Seed Analyst performs seed testing processes and procedures to determine the physical and physiological quality of seed in accordance with the International Seed Testing Association rules, laboratory quality standards, and legislative requirements.

Applicable Modules (Rules of Combination)

Knowledge Modules:

- 684301000-KM-04, Seed Quality Assessment, NQF Level 5, Credits 16
- 684301000-KM-05, Seed laboratory quality framework and seed testing legislation, NQF Level 5, Credits 8

Total number of credits for Knowledge Modules: 24

Practical Skill Modules:

- 684301000-PM-04, Perform seed testing processes and procedures to determine the physical and physiological quality of seed, NQF Level 5, Credits 17
- 684301000-PM-05, Apply laboratory quality standards and legislative requirements to ensure accurate, reproducible and reliable seed testing quality outputs and traceability, NQF Level 5, Credits 10

Total number of credits for Practical Skill Modules: 27

This qualification also requires the following Work Experience Modules:

- 684301000-WM-04, Determine the physical and physiological quality of seed, NQF Level 5, Credits 40

- 684301000-WM-05, Assure laboratory quality standards and legislative compliance, NQF Level 5, Credits 11

Total number of credits for Work Experience Modules: 51

SECTION 2: OCCUPATIONAL PROFILE

1. Occupational Purpose

performs analytical processes and procedures to determine the quality of grains and seed in accordance with the international and local protocols.

2. Occupational Tasks

- Plan and execute grain and oilseed sampling and grading processes (NQF Level 3)
- Plan and execute processes for the representative sampling of a seed lot (NQF Level 3)
- Plan, administer and conduct inspections of planted seed units for certification purposes (NQF Level 4)
- Perform seed testing processes and procedures to determine the physical and physiological quality of seed (NQF Level 5)
- Apply laboratory quality standards and legislative requirements to ensure accurate, reproducible and reliable seed testing quality outputs and traceability (NQF Level 5)

3. Occupational Task Details

3.1. Plan and execute grain and oilseed sampling and grading processes (NQF Level 3)

Unique Product or Service:

Grains and oilseeds are sampled and graded

Occupational Responsibilities:

- Plan and execute grains and oilseeds sampling and grading processes

Occupational Contexts:

- Seed lot sampling procedures and processes

3.2. Plan and execute processes for the representative sampling of a seed lot (NQF Level 3)

Unique Product or Service:

Seed lots are sampled

Occupational Responsibilities:

- Plan and execute processes for the representative sampling of a seed lot

Occupational Contexts:

- Grain and oilseed grading processes and procedures

3.3. Plan, administer and conduct inspections of planted seed units for certification purposes (NQF Level 4)

Unique Product or Service:

Varietal pure seeds are maintained and is available for certification

Occupational Responsibilities:

- Administer and inspect registered seed units at various production stages to ensure the maintenance and availability of quality varietal pure seeds for certification.

Occupational Contexts:

- Administration and inspection procedures of seed unit to ensure varietal pure seeds for certification

3.4. Perform seed testing processes and procedures to determine the physical and physiological quality of seed (NQF Level 5)**Unique Product or Service:**

Physical and physiological quality of seed determined

Occupational Responsibilities:

- Perform seed testing processes and procedures to determine the physical and physiological quality of seed

Occupational Contexts:

- Seed testing processes and procedures

3.5. Apply laboratory quality standards and legislative requirements to ensure accurate, reproducible and reliable seed testing quality outputs and traceability (NQF Level 5)**Unique Product or Service:**

Laboratory quality standards and legislative compliance assured

Occupational Responsibilities:

- Apply laboratory quality standards and legislative requirements to ensure accurate, reproducible and reliable seed testing quality outputs and traceability.

Occupational Contexts:

- Produce accurate, reproducible and reliable seed testing outputs and traceability in accordance with seed testing laboratory accreditation standards and legislative requirements.

SECTION 3: CURRICULUM COMPONENT SPECIFICATIONS

SECTION 3A: KNOWLEDGE MODULE SPECIFICATIONS

List of Knowledge Modules for which Specifications are included

- 684301000-KM-01, The collection and grading of representative grain and oilseed samples, NQF Level 3, Credits 12
- 684301000-KM-02, Seed sampling in the SA Seed Industry, NQF Level 3, Credits 8
- 684301000-KM-03, South African Seed certification legislation, rules and procedures, NQF Level 4, Credits 24
- 684301000-KM-04, Seed Quality Assessment, NQF Level 5, Credits 16
- 684301000-KM-05, Seed laboratory quality framework and seed testing legislation, NQF Level 5, Credits 8

1. 684301000-KM-01, The collection and grading of representative grain and oilseed samples, NQF Level 3, Credits 12

1.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of knowledge related to the processes for the sampling and grading of grains and oilseeds.

The learning will enable learners to demonstrate an understanding of:

- KM-01-KT01: The Grains and Oilseeds Industries (20%)
- KM-01-KT02: Grains and oilseeds sampling (40%)
- KM-01-KT03: Grains and oilseeds grading (40%)

1.2 Guidelines for Topics

1.2.1. KM-01-KT01: The Grains and Oilseeds Industries (20%)

Topic elements to be covered include:

- KT0101 Grains and oilseeds quality properties
- KT0102 Grains and oilseeds grading principles and regulatory framework

Internal Assessment Criteria and Weight

- IAC0101 List and describe the properties that influence grains and oilseeds quality
- IAC0102 List and explain the physical and chemical quality properties
- IAC0103 Explain the effect of quality properties on biological processes
- IAC0104 Explain intrinsic and induced quality characteristics
- IAC0105 Explain the purpose and types of grains and oilseeds grading standards incorporated in regulation, specifically the regulatory requirements and food hygiene and food safety standards
- IAC0106 Explain the grains and oilseeds quality factors that are part of the grading standard
- IAC0107 Explain the grains and oilseeds quality factors that are not part of the grading standard

(Weight 20%)

1.2.2. KM-01-KT02: Grains and oilseeds sampling (40%)

Topic elements to be covered include:

- KT0201 Concept and principles of representative grains and oilseeds sampling
- KT0202 Sampling methods and procedures

Internal Assessment Criteria and Weight

- IAC0201 Define the concept and principles of representative sampling in terms of grading standards and practical workplace procedures (including, the need for sampling, composite primary representative sample, working sample sizes for various grains and oilseeds)
- IAC0202 Describe the sampling tools, method and procedure for obtaining primary samples from bagged grains and oilseeds
- IAC0203 Describe the equipment, method and procedure for sampling bulk grains and oilseeds
- IAC0204 Describe the method and procedure for sampling moving grains and oilseeds
- IAC0205 Describe the equipment and procedure for sample reduction
- IAC0206 Explain the possible consequences of not following the correct sampling procedures
- IAC0207 Explain the need to use sampling equipment according to quality, safety and workplace procedures
- IAC0208 List and explain sampling documentation and record keeping during grain sampling procedures

(Weight 40%)

1.2.3. KM-01-KT03: Grains and oilseeds grading (40%)

Topic elements to be covered include:

- KT0301 Organising and preparing the workplace (personal protective clothing, instruments and equipment; Calibration (where applicable) of the appropriate measuring instruments and test equipment)
- KT0302 Grading methods and procedures

Internal Assessment Criteria and Weight

- IAC0301 Demonstrate the ability to interpret standards and quality factors to make sound grading judgements
- IAC0302 Describe a range of actions to determine the grade for wheat, white maize, yellow maize, sorghum, soya beans, sunflower-seed, canola, barley, oats, groundnuts and dry-beans (as applicable)
- IAC0303 Explain the different stored product insect pests and how to identify them
- IAC0304 Explain the primary causes of grain deterioration
- IAC0305 Apply technical judgement to identify and solve problems when defects or other anomalies are detected
- IAC0306 List and explain the method and equipment used for separation and calculation of screenings
- IAC0307 List and explain the method and equipment used for preparation of a falling number sample and determination of the falling number (where applicable)
- IAC0308 List and explain the method and equipment used for preparation of a protein content sample and determination of the protein content (where applicable)

- IAC0309 List and explain the method and equipment used for preparation of a hectolitre mass sample and the determination of the hectolitre mass (where applicable)
- IAC0310 Explain the identification and calculation of deviations from set grading standards
- IAC0311 List and describe the measuring instruments/equipment needed and the methods used for the determination of moisture content
- IAC0312 List and explain the necessary grading documentation and the record keeping processes for completed documentation

(Weight 40%)

1.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Learning resources approved in accordance with the requirements of the QCTO
- Assessment documentation, instruments and standards approved in accordance with the requirements of the QCTO

Human Resource Requirements:

- A person who meets the following requirements will facilitate learning and conduct assessments:
- Has at least 5 yearsâ experience in a grain grader position, or
- Has obtained a nationally recognised qualification in grain grading not lower than NQF level 4 with at least 3 yearsâ grain grading experience, and
- Gained at least 1 year experience in assessment practice

Legal Requirements:

- Compliance with occupational health and safety protection regulations

1.4 Exemptions

- None specified

2. 684301000-KM-02, Seed sampling in the SA Seed Industry, NQF Level 3, Credits 8

2.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of Gain knowledge related to the South African Seed industry and the rules, legislation, principles, methods and procedures governing the sampling of seed for the purpose of issuance of a seed analysis certificate (domestic or international), quality control, or other official purposes. The learning will enable learners to demonstrate an understanding of the rules, methods and equipment applied during the seed sampling processes.

The learning will enable learners to demonstrate an understanding of:

- KM-02-KT01: Seed and the seed industry (25%)
- KM-02-KT02: Seed sampling (75%)

2.2 Guidelines for Topics

2.2.1. KM-02-KT01: Seed and the seed industry (25%)

Topic elements to be covered include:

- KT0101 Review of the South African Seed Industry (including The South African National Seed Organization (SANSOR), The seed industry and seed trade, OECD certification)
- KT0102 Seed (including the living seed, Morphology and physiology of seed, Germination, vigour and storage of seed, Genetics, Genetically modified organisms, Plant health, Plant breeders' rights, Handling of seed, Seed quality, and seed treatment)
- KT0103 The International Seed Testing Association (ISTA) (including the aim of ISTA, quality assurance, future trends, international seed testing rules, authorisation of samplers)
- KT0104 Seed sampling legislation (including The Plant Improvement Act 1976, (Act 53 of 1976), Legal liability)

Internal Assessment Criteria and Weight

- IAC0101 Demonstrate an understanding of the seed industry
- IAC0102 Demonstrate an understanding of the factors pertaining to seed (e.g. Morphology and physiology of seed, Germination, vigour and storage of seed)
- IAC0103 Demonstrate an understanding of the statutory requirements and ISTA Rules pertaining to seed sampling

(Weight 25%)

2.2.2. KM-02-KT02: Seed sampling (75%)

Topic elements to be covered include:

- KT0201 Seed sampling purpose, definitions and responsibilities (including Object of sampling, Definitions, Issuing of certificates, Responsibilities in seed sampling, Application for the sampling of a seed lot, Occupational Safety and Health requirements)

- KT0202 General conditions for seed lot sampling (including Marking and sealing, Homogeneity of the seed lot, Maximum seed lot size)
- KT0203 Sampling methods and equipment (including Principles of representative seed sampling, Verification of seed lot information, Primary samples, Sampling intensity, Sampling seed in bulk containers, Sampling seed in bags, Sampling from the seed stream, Sampling by hand, Sampling with manual instruments, Sampling by automatic seed sampling devices)
- KT0204 Guidelines for obtaining a submitted sample (including Combining and blending primary samples to obtain a composite sample, Criteria for a submitted sample, Mechanical reduction methods, Hand reduction methods, Method for obtaining a submitted sample for moisture testing)
- KT0205 Sealing and marking/labelling the seed lot (including Direct sealing, Indirect sealing, Marking/labelling the seed lot)
- KT0206 Packing, sealing, marking/labelling, documentation and dispatching of a submitted sample (including Packing the submitted sample, Sealing the submitted sample, Marking/labelling the submitted sample, Submitted sample documentation, Dispatching the submitted sample, Storage of the submitted sample/s)

Internal Assessment Criteria and Weight

- IAC0201 Demonstrate an understanding of the required seed sampling documentation
- IAC0202 Demonstrate an understanding of the action/s to be taken when deviations in the condition of the seed lot, labels, documentation or seed is detected
- IAC0203 Describe the health and safety regulations that must be adhered to when drawing samples
- IAC0204 Define the concept of representative sampling
- IAC0205 Demonstrate an understanding of the methods and equipment applied to obtain primary samples from various storage modes
- IAC0206 Demonstrate an understanding of the consequences of not labelling the submitted sample correctly according to operational procedures and statutory requirements

(Weight 75%)

2.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Learning resources approved in accordance with the requirements of the QCTO
- Assessment documentation, instruments and standards approved in accordance with the requirements of the QCTO

Human Resource Requirements:

- Facilitators and Assessors will be a person who has at least 5 years experience in a seed sampler position, or has obtained a nationally recognised qualification in seed sampling not lower than NQF level 3 with at least 3 years seed sampling experience, or gained at least 1 year experience in assessment practice

Legal Requirements:

- Compliance with occupational health, safety and environmental protection regulations

2.4 Exemptions

- None specified

3. 684301000-KM-03, South African Seed certification legislation, rules and procedures, NQF Level 4, Credits 24

3.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of Gain disciplinary or conceptual knowledge (including theory) related to the seed industry, seed and seed plants, and the statutory requirements and procedures governing seed certification processes as stipulated in the Quality Assurance System of the South African Seed Certification Scheme.

The learning will enable learners to demonstrate an understanding of:

- KM-03-KT01: Seed and the seed industry (10%)
- KM-03-KT02: Seed certification administration (15%)
- KM-03-KT03: Procedures, legislation and rules for seed certification (75%)

3.2 Guidelines for Topics

3.2.1. KM-03-KT01: Seed and the seed industry (10%)

Topic elements to be covered include:

- KT0101 The primary aim of certification
- KT0102 Processes for certification (the generations, deviations from procedure)
- KT0103 Business principles
- KT0104 Values and ethics in the seed industry

Internal Assessment Criteria and Weight

- IAC0101 Explain the primary aim of certification
- IAC0102 Demonstrate an understanding of the processes for seed certification
- IAC0103 Demonstrate an understanding of the implications of unethical actions/conduct

(Weight 10%)

3.2.2. KM-03-KT02: Seed certification administration (15%)

Topic elements to be covered include:

- KT0201 Registration of units (including Completion of the Application for Registration of a Piece of Land as a Unit, Site map, Registration fees, Coding, Time frames)
- KT0202 Field inspection reports (including SB Field Inspection Reports, Field inspection reports per visit)
- KT0203 Authorisation of inspectors (including General information, Controlling and administering of the scheme, Monitoring and control, Evaluation, Conditions, Withdrawal or termination of authorisation, Appeals, Authority, Requirements for authorisation and validity)

Internal Assessment Criteria and Weight

- IAC0201 Explain the process for the registration of a seed unit
- IAC0202 Demonstrate an understanding of the completion of the required field inspection reports
- IAC0203 Demonstrate an understanding of the requirements for authorisation of inspectors

(Weight 15%)

3.2.3. KM-03-KT03: Procedures, legislation and rules for seed certification (75%)

Topic elements to be covered include:

- KT0301 Seed certification legislation and rules (including The Plant Improvement Act 1976 (Act 53 of 1976) -The South African Seed Certification Scheme & The Organization for Economic Coordination & Development Scheme (OECD), The International Seed Testing Association (ISTA) Rules, and Statutory occupational safety, health and environmental requirements)
- KT0302 Steps in seed certification (including Application for registration of a seed unit, Registration of certified seed units, Field inspections, Harvesting and threshing of seed, Processing of seed, Official certificate, Post-control, Department of Agriculture, Registrar of plant Improvement, Registered Seed Testing Laboratories)
- KT0303 Inspection times and field methodology (including Purpose of field inspection, The seed inspector involved in field inspections, Method in conducting a field inspection, How to reach the objective, Field inspection reports, Isolation, Varietal purity)
- KT0304 Seed production in South Africa (including Crop breeding, Seed production, Field methodology, Disease infected plants, Varieties, Types of lines in single crosses and hybrids, Deviating types, Seed production planning, Harvesting of seed, Seed quality requirements, Physical requirements)
- KT0305 Procedures for un-cleaned seed (Requirements of Scheme, Harvesting/threshing, Requirements for packaging and dispatch, Preliminary assessments)
- KT0306 Phytosanitary field inspections (including Background, Procedures and requirements for phytosanitary authorisation, Procedures for phytosanitary field inspections)

Internal Assessment Criteria and Weight

- IAC0301 Demonstrate an understanding of the Plant Improvement Act 1976 (Act 53 of 1976)
- IAC0302 Demonstrate an understanding of the South African Seed Certification Scheme and the OECD scheme
- IAC0303 Demonstrate an understanding of the International Seed Testing Association (ISTA) Rules
- IAC0304 Demonstrate an understanding of the statutory occupational safety, health and environmental requirements
- IAC0305 Explain the steps in the process of seed certification
- IAC0306 Define the purpose of field inspections
- IAC0307 Describe the method to be applied for the inspection of a specific field crop

- IAC0308 Demonstrate an understanding of the inspection times and field methodology for various seed crops
- IAC0309 Demonstrate an understanding of seed production and the quality requirements for purposes of certification
- IAC0310 Describe the procedures to be followed for un-cleaned seed
- IAC0311 Demonstrate an understanding of the requirements for phytosanitary authorisation
- IAC0312 Describe the procedures for phytosanitary field inspections

(Weight 75%)

3.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Learning resources approved in accordance with the requirements of the QCTO
- Assessment documentation, instruments and standards approved in accordance with the requirements of the QCTO

Human Resource Requirements:

- Facilitators and Assessors will be a person who has at least 5 years experience in seed certification as an authorised seed certifier, and has gained at least 1 year experience in assessment practice

Legal Requirements:

- None specified

3.4 Exemptions

- None specified

4. 684301000-KM-04, Seed Quality Assessment, NQF Level 5, Credits 16

4.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of build an understanding of the seed industry; international seed testing rules; seed testing methods and techniques; and basic seed science and technology.

The learning will enable learners to demonstrate an understanding of:

- KM-04-KT01: Seed and the seed industry (10%)
- KM-04-KT02: Seed testing (50%)
- KM-04-KT03: Seed science and technology (40%)

4.2 Guidelines for Topics

4.2.1. KM-04-KT01: Seed and the seed industry (10%)

Topic elements to be covered include:

- KT0101 Overview of the seed industry (including The South African National Seed Organization (SANSOR), The Department of Agriculture, Forestry and Fisheries, The seed industry and seed trade)
- KT0102 The International Seed testing Association (ISTA) (including The International Rules for Seed Testing)
- KT0103 Seed (including The importance of seed, Morphology and physiology of seed, Germination, vigour and storage of seed, Genetics, Genetically modified organisms, Plant health, Handling of seed, Seed quality, treatments and identification)

Internal Assessment Criteria and Weight

- IAC0101 Demonstrate an understanding of the seed industry
- IAC0102 Demonstrate the ability to ascertain and interpret the applicable requirements for specific tests of various seed kinds

(Weight 10%)

4.2.2. KM-04-KT02: Seed testing (50%)

Topic elements to be covered include:

- KT0201 Testing methods and techniques (including seed sampling, receiving and registering seed samples, preparation requirements for various seed kinds and/or testing techniques, sample homogeneity assessment, sample reduction, physical purity analysis, promoting germination, determine germination potential, moisture content and seed vigour, seed viability estimation, calculate and express test results in required format, recording and reporting of seed test results.

Internal Assessment Criteria and Weight

- IAC0201 Demonstrate an understanding of seed sampling methods and techniques

- IAC0202 Explain the steps in the process to receive and register a seed sample
- IAC0203 Demonstrate the ability to ascertain and interpret the applicable preparation requirements for the testing of various seed kinds according to ISTA rules
- IAC0204 Demonstrate knowledge of the method for seed sample homogeneity assessment according to ISTA rules
- IAC0205 Describe the procedure to do the following: sample reduction; physical purity analysis; promote germination; determine moisture content; estimate seed viability; determine seed vigour, according to ISTA rules
- IAC0206 Demonstrate the ability to apply technical judgement to determine germination potential
- IAC0207 Demonstrate the ability to calculate and express test results in the required format, according to ISTA rules
- IAC0208 Demonstrate an understanding of the seed test result recording and reporting rules and procedure, according to ISTA rules

(Weight 50%)

4.2.3. KM-04-KT03: Seed science and technology (40%)

Topic elements to be covered include:

- KT0301 Seed identification (including characteristics for identification of seed, component parts: pure seed, inert matter and other seeds, crop and weed seed contaminants, prohibited and restricted seed, the differences between impurities, physically pure seed, defects and irregularities.
- KT0302 Basic principles of seed science including Biology

Internal Assessment Criteria and Weight

- IAC0301 Demonstrate an understanding of the characteristics for identification of seed
- IAC0302 Demonstrate an understanding of the procedure for the separation of a seed sample into pure seed, inert matter and other seed
- IAC0303 Demonstrate an understanding of crop and weed seed contaminants and prohibited and restricted seed
- IAC0304 Demonstrate an understanding of the differences between impurities, physically pure seed, defects and irregularities
- IAC0305 Describe the procedure to perform a physical purity analysis according to ISTA rules and laboratory procedures for a specific species
- IAC0306 Demonstrate an understanding of the basic principles of seed science

(Weight 40%)

4.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Learning resources approved in accordance with the requirements of the QCTO
- Assessment documentation, instruments and standards approved in accordance with the requirements of the QCTO

Human Resource Requirements:

- A person who meets the following requirements will conduct facilitation of learning and assessments:
- Has at least 5 years experience in a Seed Analyst position, or has obtained a nationally recognised qualification in seed analysis not lower than NQF level 4 with at least 3 years seed analysis experience,
- and Gained at least 1 year experience in assessment practice

Legal Requirements:

- Compliance with occupational health and safety protection regulations

4.4 Exemptions

- None recognised

5. 684301000-KM-05, Seed laboratory quality framework and seed testing legislation, NQF Level 5, Credits 8

5.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of the framework of a documented quality system based on appropriate accreditation standards within which authorised seed personnel and laboratories operate, as well as the legislative framework regulating seed testing practices.

The learning will enable learners to demonstrate an understanding of:

- KM-05-KT01: Seed laboratory quality principles and framework (60%)
- KM-05-KT02: Seed testing legislative framework (40%)

5.2 Guidelines for Topics

5.2.1. KM-05-KT01: Seed laboratory quality principles and framework (60%)

Topic elements to be covered include:

- KT0101 ISTA Seed testing laboratory accreditation standards (including principles of ethics in seed testing laboratories, principles and framework of a documented quality system, laboratory equipment application and maintenance standards, laboratory consumable material standards and practices, seed sample storage practices and procedures, documentation and amendment control system: process for implementation of current issues of the appropriate recording and reporting documentation and process for the authorisation, processing and notification of amendments to documents)
- KT0102 Seed testing legislative framework (including statutory occupational health and safety requirements, The Plant Improvement Act, 1976 (Act 53 of 1976): registration of a seed testing laboratory, provisions relating to seed and seed samples, and SA Seed Certification Scheme

Internal Assessment Criteria and Weight

- IAC0101 Demonstrate an understanding of ISTA Seed testing laboratory accreditation standard

(Weight 60%)

5.2.2. KM-05-KT02: Seed testing legislative framework (40%)

Topic elements to be covered include:

- KT0201 Seed testing legislative framework (including statutory occupational health and safety requirements, The Plant Improvement Act, 1976 (Act 53 of 1976): registration of a seed testing laboratory, provisions relating to seed and seed samples, and SA Seed Certification Scheme

Internal Assessment Criteria and Weight

- IAC0201 Demonstrate an understanding of the regulatory legislation governing seed testing

(Weight 40%)

5.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Learning resources approved in accordance with the requirements of the QCTO
- Assessment documentation, instruments and standards approved in accordance with the requirements of the QCTO

Human Resource Requirements:

- A person who meets the following requirements will facilitate learning and conduct assessments:
- Has at least 5 years' experience in a grain grader position, or
- Has obtained a nationally recognised qualification in grain grading not lower than NQF level 4 with at least 3 years grain grading experience, and
- Gained at least 1 year experience in assessment practice

Legal Requirements:

- Compliance with occupational health and safety protection regulations

5.4 Exemptions

- None recognised

SECTION 3B: PRACTICAL SKILL MODULE SPECIFICATIONS

List of Practical Skill Module Specifications

- 684301000-PM-01, Plan and execute grains and oilseeds sampling and grading processes, NQF Level 3, Credits 16
- 684301000-PM-02, Plan and execute processes for the representative sampling of a seed lot, NQF Level 3, Credits 14
- 684301000-PM-03, Plan and implement administrative processes and inspect registered seed units at various production stages to ensure the maintenance and availability of quality varietal pure seeds for certification, NQF Level 4, Credits 20
- 684301000-PM-04, Perform seed testing processes and procedures to determine the physical and physiological quality of seed, NQF Level 5, Credits 17
- 684301000-PM-05, Apply laboratory quality standards and legislative requirements to ensure accurate, reproducible and reliable seed testing quality outputs and traceability, NQF Level 5, Credits 10

1. 684301000-PM-01, Plan and execute grains and oilseeds sampling and grading processes, NQF Level 3, Credits 16

1.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to Collect and reduce samples of a grain/oilseed consignment Plan and execute processes for the grading of grains and oilseeds

The learner will be required to:

- PM-01-PS01: Collect and prepare samples of a grain/oilseed consignment for the grading process
- PM-01-PS02: Plan and prepare for the grading of a grain/oilseed consignment
- PM-01-PS03: Analyse and grade the grain/oilseed working sample

1.2 Guidelines for Practical Skills

1.2.1. PM-01-PS01: Collect and prepare samples of a grain/oilseed consignment for the grading process

Scope of Practical Skill

Given a case study, a simulated grain/oilseed consignment (scaled), sampling tables and applicable rules, sampling instruments/equipment and clothing, relevant documents and standard operating procedures, the learner must be able to:

- PA0101 Select the appropriate instruments/equipment and personal protective clothing/equipment required for the sampling procedure
- PA0102 Draw the required primary samples of the grain or oilseed consignment
- PA0103 Apply the applicable sample reduction technique to obtain a representative working sample
- PA0104 Present the prepared sample and documentation for the grading process

Applied Knowledge

- AK0101 Concept and principles of representative grains and oilseeds sampling
- AK0102 Sampling methods and procedures

Internal Assessment Criteria

- IAC0101 Samples of a grain/oilseed consignment are collected and prepared for the grading process according to workplace procedures
- IAC0102 The prepared sample and documentation for the grading process are presented

1.2.2. PM-01-PS02: Plan and prepare for the grading of a grain/oilseed consignment

Scope of Practical Skill

Given a suitable workplace, accompanying documentation, the relevant instruments, equipment, standard operating procedures and regulations, the learner must be able to:

- PA0201 Determine a sequence of operation and prepare the workplace with the instruments and equipment required for the testing procedures pertaining to the specific grain or oilseed to be analysed
- PA0202 Select and check the functionality and calibration (where applicable) of the appropriate measuring instruments and test equipment and make adjustments where required
- PA0203 Select the appropriate personal protective clothing and equipment

Applied Knowledge

- AK0201 Organising and preparing the workplace
- AK0202 Testing procedures
- AK0203 Measuring instruments and test equipment
- AK0204 Personal protective equipment

Internal Assessment Criteria

- IAC0201 Planning and preparation procedures for the grading of a grain/oilseed consignment are performed according to workplace procedures and instructions
- IAC0202 The appropriate instruments and equipment are selected, checked and prepared
- IAC0203 Appropriate personal protective clothing and equipment are selected

1.2.3. PM-01-PS03: Analyse and grade the grain/oilseed working sample

Scope of Practical Skill

Given a representative working sample of a grain/oilseed consignment and accompanying documentation, measuring and testing instruments/equipment and grading standards, the learner must be able to:

- PA0301 Determine the moisture content of a working sample using appropriate equipment and record result
- PA0302 Separate grain/oilseed and screenings, defective grain, poisonous seeds, other grain and foreign matter
- PA0303 Calculate and record screening percentage and identify, calculate and record defects, poisonous seeds, other grain and foreign matter
- PA0304 Prepare falling number sample and determine and record result (where applicable)
- PA0305 Prepare a protein content sample and determine and record result (where applicable)
- PA0306 Prepare a hectolitre mass sample and determine and record result (where applicable)
- PA0307 Interpret results and allocate grade
- PA0308 Record grade allocated, deviations, actions taken/recommended
- PA0309 Forward completed documentation in accordance with standard operating procedures

Applied Knowledge

- AK0301 Grains and oilseeds grading principles and regulatory framework
- AK0302 Grading methods and procedures
- AK0303 Required calculations

Internal Assessment Criteria

- IAC0301 The grain/oilseed working sample is analysed and graded using appropriate workplace procedures
- IAC0302 Grades are recorded and completed documentation is forwarded according to workplace procedures

1.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Demonstrate access to:
- Structured examples and scenarios
- Learner instructions and work sheets
- Assessment instruments and standards for each practical skill that clearly defines standards of competence as competent or not yet competent
- Reflective learning exercises

Human Resource Requirements:

- Facilitators with subject matter expertise
- Learner facilitator ratio of 1:15
- Assessors with recognised assessment practice training and subject matter expertise
- Internal assessors can be the same person as the facilitator

Legal Requirements:

- Compliance with occupational health and safety protection regulations

1.4 Exemptions

- None specified

2. 684301000-PM-02, Plan and execute processes for the representative sampling of a seed lot, NQF Level 3, Credits 14

2.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to plan and execute processes for the drawing, preparation and submission of a representative sample of a seed lot to a seed testing laboratory for analysis in accordance with applicable legislation, ISTA Rules and seed laboratory requirements.

The learner will be required to:

- PM-02-PS01: Plan and prepare for sampling
- PM-02-PS02: Identify and verify seed lot to be sampled
- PM-02-PS03: Draw primary seed samples
- PM-02-PS04: Obtain a submitted sample
- PM-02-PS05: Pack, label, seal and submit sample to the seed testing laboratory

2.2 Guidelines for Practical Skills

2.2.1. PM-02-PS01: Plan and prepare for sampling

Scope of Practical Skill

Given a controlled simulated learning environment, a case study, sampling application form, sampling labels, sampling equipment and PPE, the learner must be able to:

- PA0101 Obtain and complete sampling application form
- PA0102 Obtain and prepare appropriate seed sampling label/s
- PA0103 Select applicable prescribed equipment and PPE

Applied Knowledge

- AK0101 Seed sampling purpose, definitions and responsibilities

Internal Assessment Criteria

- IAC0101 The purpose of seed sampling and an understanding of the eight important aspects of seed sampling are explained
- IAC0102 Appropriate equipment and PPE are selected
- IAC0103 Sampling application form and labels are completed in accordance with workplace instructions

2.2.2. PM-02-PS02: Identify and verify seed lot to be sampled

Scope of Practical Skill

Given a controlled learning environment, simulated seed lot, prepared sampling application form and applicable rules, the learner must be able to:

- PA0201 Compare and evaluate the information on the application form with the content of the seed lot
- PA0202 Evaluate accessibility, light and height of the seed lot
- PA0203 Inspect and verify labels, kind, variety, code or lot number, certification number, year of production, net weight of the container and lot size

Applied Knowledge

- AK0201 Responsibilities in seed sampling
- AK0202 Application for the sampling of a seed lot
- AK0203 General conditions for seed lot sampling
- AK0204 Sealing and marking/labelling the seed lot

Internal Assessment Criteria

- IAC0201 The responsibilities of the seed sampler are explained
- IAC0202 Action to be taken if the nature of the presentation of the seed lot or container makes it impossible to adequately verify or sample the lot is explained
- IAC0203 Action to be taken when given information does not correspond with content of seed lot is explained
- IAC0204 Seed lot information is accurately verified

2.2.3. PM-02-PS03: Draw primary seed samples

Scope of Practical Skill

Given a controlled learning environment, a simulated seed lot, sampling equipment, PPE, applicable rules and procedures, the learner must be able to:

- PA0301 Determine lot size - mass and number of containers
- PA0302 Refer to tables containing prescribed maximum lot size and minimum sample size
- PA0303 Calculate sample intensity for drawing of primary samples (number of primary samples required)
- PA0304 Select the correct method for the seed kind and/or container
- PA0305 Use the correct equipment and PPE
- PA0306 Apply the correct sampling method for the seed kind and/or container
- PA0307 Select the correct trier for the seed kind
- PA0308 Draw primary samples into the applicable sample pan in the prescribed manner
- PA0309 Vary sampling position as prescribed

- PA0310 Evaluate uniformity and appearance of each primary sample in the seed pan
- PA0311 Close container/holes according to prescribed method for the specific container

Applied Knowledge

- AK0301 Sampling methods and equipment

Internal Assessment Criteria

- IAC0301 The action to be taken when the seed lot exceeds the maximum mass allowed for the specific crop is explained
- IAC0302 The consequences of not using the appropriate equipment and method for drawing a sample according to procedures and statutory requirements are explained
- IAC0303 The principles underpinning the taking of primary samples in various storage modes are explained
- IAC0304 The conditions where the hand sampling method ought to be used are explained
- IAC0305 The implications of not adhering to the relevant safety and health regulations when drawing samples are explained
- IAC0306 The number of primary samples required is correctly calculated
- IAC0307 The correct equipment and appropriate PPE is utilised
- IAC0308 The correct procedure is applied for the drawing of primary samples of the seed lot
- IAC0309 The lot size is accurately determined
- IAC0310 The sample size is accurately determined
- IAC0311 Sample/s that are representative of the composition of the seed lot are presented
- IAC0312 Holes made in containers are closed and sealed or repaired

2.2.4. PM-02-PS04: Obtain a submitted sample

Scope of Practical Skill

Given a controlled simulated learning environment, primary samples, mass meter, applicable tables and procedures, soil divider, applicable table, rules and procedures, the learner must be able to:

- PA0401 Combine and blend primary samples to obtain a composite sample
- PA0402 Weigh and determine the composite sample mass using the prescribed equipment
- PA0403 Reduce a composite sample by hand in accordance with procedures
- PA0404 Reduce a composite sample with the use of a soil divider in accordance with procedures

Applied Knowledge

- AK0401 Guidelines for obtaining a submitted sample

Internal Assessment Criteria

- IAC0401 The principles, methods and equipment for obtaining a composite sample are explained
- IAC0402 Circumstances where submitted sample mass may be less than the prescribed mass are explained
- IAC0403 The instances where a hand-halving method would be preferred are explained
- IAC0404 The method for obtaining a submitted sample for moisture testing are explained
- IAC0405 The procedures are followed to combine and blend primary samples
- IAC0406 The appropriate steps are followed to reduce the composite sample
- IAC0407 A composite sample is presented with the correct mass and representivity of the composition of the seed lot
- IAC0408 A submitted sample is presented with the correct mass and representivity of the composition of the seed lot

2.2.5. PM-02-PS05: Pack, label, seal and submit sample to the seed testing laboratory

Scope of Practical Skill

Given a controlled simulated learning environment, submitted sample, label and seal, cold storage container, applicable rules and procedures, the learner must be able to:

- PA0501 Prepare and complete the label for the submitted sample as prescribed
- PA0502 Pour the sample into a clean container in the manner as prescribed
- PA0503 Attach the completed sampling label, seal the container and place in a cold storage container in accordance with procedures for transit to laboratory
- PA0504 Finalise and sign sampling application form
- PA0505 Submit sample with completed documentation
- PA0506 Inform relevant parties of sampling process findings and deviations
- PA0507 Forward copy of sampling application and proof of sample submission to relevant parties
- PA0508 Retain a copy of the sampling application form and proof of sample submission for record purposes

Applied Knowledge

- AK0501 Sampling methods and equipment
- AK0502 Labelling and documentation procedures
- AK0503 Statutory requirements

Internal Assessment Criteria

- IAC0501 The requirements for a sample container to be used for purity analysis, germination test and moisture determination respectively are explained

- IAC0502 The consequences of not labelling the sample correctly according to procedures and statutory requirements are explained
- IAC0503 The identifying reference with which a submitted sample must be marked is explained
- IAC0504 The consequences of not completing and forwarding documentation according to operational procedures and statutory requirements are explained
- IAC0505 The appropriate procedures are followed for the packing, sealing and labelling of the submitted sample
- IAC0506 Procedure/s are followed in communicating sampling process findings
- IAC0507 The submitted sample meets all the necessary requirements regarding packaging, sealing, labelling and documentation

2.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Demonstrate access to:
- Structured examples and scenarios
- Learner instructions and work sheets
- Assessment instruments and standards for each practical skill that clearly defines standards of competence as competent or not yet competent
- Reflective learning exercises

Human Resource Requirements:

- Facilitators with subject matter expertise
- Learner facilitator ratio of 1:15
- Assessors with recognised assessment practice training and subject matter expertise
- Internal assessors can be the same person as the facilitator

Legal Requirements:

- Compliance with occupational health and safety protection regulations

2.4 Exemptions

- None specified

3. 684301000-PM-03, Plan and implement administrative processes and inspect registered seed units at various production stages to ensure the maintenance and availability of quality varietal pure seeds for certification, NQF Level 4, Credits 20

3.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to plan and implement administrative processes and monitor grower adherence to contractual agreements by planning and conducting various checks/inspections, instructing on corrective actions and reporting on the varietal condition of seed crops under the SA Seed Certification Scheme at different stages of seed production, harvesting and processing to ensure that both the varietal identity and the varietal purity is maintained and safeguarded.

The learner will be required to:

- PM-03-PS01: Register a seed unit in accordance with the Seed Certification Scheme
- PM-03-PS02: Draw up an inspection plan indicating the method, frequency, route and sequence to be followed
- PM-03-PS03: Establish the varietal identity of a seed crop
- PM-03-PS04: Determine the characteristics and quantity of varietal impurities in a seed crop
- PM-03-PS05: Compile and distribute inspection reports

3.2 Guidelines for Practical Skills

3.2.1. PM-03-PS01: Register a seed unit in accordance with the Seed Certification Scheme

Scope of Practical Skill

Given a controlled simulated learning environment and scenario, documents, calculator, seed unit locality map and site directions, the learner must be able to:

- PA0101 Obtain seed unit locality map and site directions
- PA0102 Prepare a registration document
- PA0103 Calculate fees as prescribed
- PA0104 Complete and submit registration documents, locality map and fees as prescribed
- PA0105 Distribute required documentation to inform relevant parties

Applied Knowledge

- AK0101 Registration of units

Internal Assessment Criteria

- IAC0101 An understanding of the procedures required in the registration of units are demonstrated
- IAC0102 The procedure for the calculation of registration fees and adherence to time frames are explained
- IAC0103 Items and fees are collected according to instructions

- IAC0104 Documentation is completed in accordance with instructions

3.2.2. PM-03-PS02: Draw up an inspection plan indicating the method, frequency, route and sequence to be followed

Scope of Practical Skill

Given a controlled simulated learning environment, scenario, required planting plan, site map and production information, the learner must be able to:

- PA0201 Acquire the planting plan, instructions and documentation
- PA0202 Use the seed unit planting plan and other information supplied to draw up an inspection plan
- PA0203 Determine and indicate the inspection method - route and sequence according to crop and variety specifics
- PA0204 Determine and stipulate inspection frequency (stages and times) according to crop and variety specifications
- PA0205 Select appropriate personal protective equipment (PPE)

Applied Knowledge

- AK0201 Authorisation of inspectors
- AK0202 Steps in seed certification
- AK0203 Inspection times and field methodology

Internal Assessment Criteria

- IAC0201 Consequences of not planning the inspection, route and sequence according to prescribed procedures for the specific crop and variety are explained
- IAC0202 Application of SA Seed Certification Scheme requirement and varietal descriptions are explained
- IAC0203 Scheme requirements and varietal descriptions are applied
- IAC0204 The inspection method and frequency are selected in accordance with the specific field, crop and variety

3.2.3. PM-03-PS03: Establish the varietal identity of a seed crop

Scope of Practical Skill

Given a controlled simulated learning environment, a crop inspection form, seed lot label, a scenario indicating the seed crop information including the variety description, or description of the parental lines/components in the case of hybrid production, history of the seed used to sow the seed crop and the cropping history of the field, the learner must be able to:

- PA0301 Confirm the variety to be inspected against the information on the crop inspection form
- PA0302 Use the varietal characteristics to confirm the varietal identity of the seed crop

- PA0303 Determine if the crop as a whole is consistent with the characteristics of the variety given in the official description
- PA0304 Evaluate and compare plants true to type
- PA0305 Determine the percentage of deviations
- PA0306 Inform grower of deviations and corrective actions
- PA0307 Reject or approve unit depending on deviations and corrective action taken

Applied Knowledge

- AK0301 Seed certification legislation and rules
- AK0302 Production of seed

Internal Assessment Criteria

- IAC0301 The implications of not identifying and reporting on deviations and informing relevant parties according to work site procedures are explained
- IAC0302 Possible corrective actions for specific deviations are explained
- IAC0303 Appropriate method/s are adopted to assess the varietal identity
- IAC0304 True to type and percentage deviations are determined
- IAC0305 Appropriate decisions and recommendations are made

3.2.4. PM-03-PS04: Determine the characteristics and quantity of varietal impurities in a seed crop

Scope of Practical Skill

Given a controlled simulated learning environment and scenario, the variety description, purity standards and other relevant information, the learner must be able to:

- PA0401 Determine and record the characteristics of varietal impurities
- PA0402 Calculate and record the quantity of impurities expressed in a percentage

Applied Knowledge

- AK0401 Seed certification legislation and rules
- AK0402 Quality requirements for various seed crops

Internal Assessment Criteria

- IAC0401 The morphological and physiological characteristics for assessing the varietal purity of the specific crop are explained
- IAC0402 Appropriate method is adopted to determine and calculate varietal impurities
- IAC0403 The method for obtaining a submitted sample for moisture testing are explained
- IAC0404 The characteristics and quantity of varietal impurities for accuracy are determined

- IAC0405 Documentation is accurately completed

3.2.5. PM-03-PS05: Compile and distribute inspection reports

Scope of Practical Skill

Given a controlled simulated learning environment, scenario, inspection findings and required documents/report templates, the learner must be able to:

- PA0501 Compile and distribute an inspection report per visit as required
- PA0502 Compile and distribute a SB Field Inspection Report as prescribed by the Seed Certification Scheme
- PA0503 Retain copies of the required inspection report/s for record purposes

Applied Knowledge

- AK0501 Field inspection reports

Internal Assessment Criteria

- IAC0501 The implications of unethical actions/conduct are explained
- IAC0502 The consequences of not completing documentation according to prescribed requirements are explained
- IAC0503 The reports are correctly, clearly and neatly completed

3.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Demonstrate access to:
- Structured examples and scenarios
- Learner instructions and work sheets
- Assessment instruments and standards for each practical skill that clearly defines standards of competence as competent or not yet competent
- Reflective learning exercises

Human Resource Requirements:

- Facilitators with subject matter expertise
- Learner facilitator ratio of 1:15
- Assessors with recognised assessment practice training and subject matter expertise
- Internal assessors can be the same person as the facilitator

Legal Requirements:

- Compliance with occupational health and safety protection regulations

3.4 Exemptions

- None recognised

4. 684301000-PM-04, Perform seed testing processes and procedures to determine the physical and physiological quality of seed, NQF Level 5, Credits 17

4.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to perform processes and procedures prescribed for the determination of the physical and physiological quality of seed samples in accordance with the current version of the ISTA Rules.

The learner will be required to:

- PM-04-PS01: Receive and register a seed sample
- PM-04-PS02: Divide a submitted sample to obtain a working sample
- PM-04-PS03: Conduct a physical purity analysis using specialised equipment
- PM-04-PS04: Identify crop and weed seed contaminants
- PM-04-PS05: Prepare seed samples for testing
- PM-04-PS06: Apply technical judgement to determine germination potential and viability
- PM-04-PS07: Apply technical judgement to determine moisture content of seed
- PM-04-PS08: Calculate and express results in the required format
- PM-04-PS09: Compile a seed analysis report

4.2 Guidelines for Practical Skills

4.2.1. PM-04-PS01: Receive and register a seed sample

Scope of Practical Skill

Given a controlled simulated learning environment and sample, documentation, mass meter and sample register the learner must be able to:

- PA0101 Observe and assess the physical status of the sample
- PA0102 Compare label information with sample and documentation
- PA0103 Determine the mass of submitted seed sample
- PA0104 Register the seed sample and allocate reference number
- PA0105 Generate laboratory work cards for each test required
- PA0106 File documentation to await test finalisation

Applied Knowledge

- AK0101 Receiving and registering seed samples

Internal Assessment Criteria

- IAC0101 Appropriate responses to discrepancies in physical status of samples received and label information are explained

- IAC0102 Action to be taken when the seed sample mass does not comply with ISTA rules is explained
- IAC0103 The seed sample is compared with the documentation received
- IAC0104 Discrepancies are handled appropriately
- IAC0105 Register and allocation of reference number are completed
- IAC0106 Laboratory work cards for tests required are completed

4.2.2. PM-04-PS02: Divide a submitted sample to obtain a working sample

Scope of Practical Skill

Given a controlled simulated learning environment and submitted sample, purity work card, ISTA Rules, seed testing equipment and instruments the learner must be able to:

- PA0201 Determine mass of submitted seed sample and record on purity work card
- PA0202 Confirm working sample mass according to seed kind
- PA0203 Decide on reduction method for seed kind
- PA0204 Apply applicable sample reduction technique to obtain working sample

Applied Knowledge

- AK0201 Method for seed sample homogeneity assessment
- AK0202 Methods and techniques for sample reduction

Internal Assessment Criteria

- IAC0201 Sample homogeneity and choice of specific sample reduction method are explained
- IAC0202 Seed reduction technique is used according to workplace procedures
- IAC0203 Status of homogeneity is displayed
- IAC0204 Submitted sample mass is accurately completed on purity work card
- IAC0205 Mass of working sample is accurately obtained

4.2.3. PM-04-PS03: Conduct a physical purity analysis using specialised equipment

Scope of Practical Skill

Given a controlled simulated learning environment, working sample, purity card, containers, cleaning materials, working instruments, mass meter, microscope/magnifying lamp, sieves the learner must be able to:

- PA0301 Ascertain and interpret the applicable purity requirements for the seed kind
- PA0302 Conduct the purity analysis procedure
- PA0303 Describe, weigh and record all purity analysis components

- PA0304 Package components for record purposes and additional tests

Applied Knowledge

- AK0301 The International Rules for Seed Testing
- AK0302 Methods and techniques to perform a physical purity analysis
- AK0303 The differences between impurities, physically pure seed, defects and irregularities
- AK0304 Seed identification (including characteristics for identification of seed, component parts: pure seed, inert matter and other seeds, crop and weed seed contaminants, prohibited and restricted seed, the differences between impurities, physically pure seed, defects and irregularities)

Internal Assessment Criteria

- IAC0301 The selection and interpretation of pure seed is defined and explained
- IAC0302 The consequences of incorrect selection of purity are explained
- IAC0303 The appropriate procedures are adopted for the purity analysis
- IAC0304 The purity analysis result is recorded

4.2.4. PM-04-PS04: Identify crop and weed seed contaminants

Scope of Practical Skill

Given a controlled simulated learning environment, crop and weed seed, seed reference collection, seed identification literature, working instruments, microscope/magnifying lamp the learner must be able to:

- PA0401 Study seed characteristics and group seeds according to familiarities
- PA0402 Compare seed with seed identification literature to assist with identification
- PA0403 Confirm comparison with seed specimen/s in reference collection
- PA0404 Record identification result

Applied Knowledge

- AK0401 Crop and weed seed contaminants
- AK0402 Prohibited and restricted seed
- AK0403 Characteristics for identification of seed
- AK0404 Seed anatomy and identification

Internal Assessment Criteria

- IAC0401 The characteristics used for grouping seed are explained
- IAC0402 The consequences if prohibited seed is present are explained
- IAC0403 Reference material is used appropriately
- IAC0404 Identification is correctly recorded

4.2.5. PM-04-PS05: Prepare seed samples for testing

Scope of Practical Skill

Given a controlled simulated learning environment, pure seed sample, work card, containers, substrate, ISTA Rules, water/chemicals, cleaning materials, working instruments the learner must be able to:

- PA0501 Ascertain and interpret the applicable preparation requirements for the seed kind
- PA0502 Conduct the sample reduction method for obtaining a working sample
- PA0503 Prepare containers and substrate or chemicals according to standard operational procedure
- PA0504 Position seed in/on substrate or complete process in accordance with standard operational procedure
- PA0505 Record details on work card

Applied Knowledge

- AK0501 Preparation requirements for various seed kinds and/or testing techniques

Internal Assessment Criteria

- IAC0501 Choice of sample reduction method is explained
- IAC0502 Choice of process method is explained
- IAC0503 The consequences of using incorrect incubation temperature or process are explained
- IAC0504 Incubation period or test results are calculated
- IAC0505 Seed reduction technique are applied
- IAC0506 Containers and substrate or chemicals are prepared
- IAC0507 Process technique is applied
- IAC0508 Information is accurately recorded on work card

4.2.6. PM-04-PS06: Apply technical judgement to determine germination potential and viability

Scope of Practical Skill

Given a controlled simulated learning environment, work card, samples ISTA Rules and Handbooks, cleaning materials, working instruments the learner must be able to:

- PA0601 Ascertain and interpret the applicable evaluation criteria for the seed kind
- PA0602 Apply technical judgement to assess physical appearance of all replicates and record observations
- PA0603 Group seed/seedlings according to prescribed categories
- PA0604 Record number of seed/seedlings per group/category and describe findings on work card
- PA0605 Extend incubation period when required according to ISTA rules

Applied Knowledge

- AK0601 Methods and techniques to determine germination potential

Internal Assessment Criteria

- IAC0601 Choice of seed/seedling evaluation criteria is explained
- IAC0602 The differentiation of seed/seedlings is described
- IAC0603 The criteria for extending incubation period are explained
- IAC0604 The criteria for retesting grouped seed/seedlings according to prescribed categories are explained
- IAC0605 Seed/seedlings are grouped according to prescribed categories
- IAC0606 Judgements are made and results are recorded

4.2.7. PM-04-PS07: Apply technical judgement to determine moisture content of seed

Scope of Practical Skill

Given a controlled simulated learning environment, work card, samples ISTA rules and handbooks, cleaning materials, working instruments the learner must be able to:

- PA0701 Select the applicable method and procedure for moisture determination of the specific crop type
- PA0702 Prepare prescribed equipment and documentation
- PA0703 Apply sample reduction method to obtain a working sample for moisture
- PA0704 Weigh and record mass before drying
- PA0705 Perform drying process
- PA0706 Weigh and record mass after drying
- PA0707 Determine and record moisture content

Applied Knowledge

- AK0701 Principles for moisture determination
- AK0702 Methods and techniques to determine moisture content

Internal Assessment Criteria

- IAC0701 Factors influencing results are explained
- IAC0702 Choice of moisture technique is motivated and explained
- IAC0703 Equipment is prepared according to workplace procedures
- IAC0704 The sampling technique is applied according to workplace procedures
- IAC0705 Judgements are made and results are recorded

4.2.8. PM-04-PS08: Calculate and express results in the required format

Scope of Practical Skill

Given a controlled learning environment, finalised work cards, ISTA Rules, calculators the learner must be able to:

- PA0801 Determine sum of various components for accuracy
- PA0802 Calculate percentages according to prescribed procedures
- PA0803 Verify applicable tolerances according to procedures
- PA0804 Determine difference between replicates
- PA0805 Apply tolerance and check if within specified tolerance limits
- PA0806 Retest if results are out tolerance or not reliable

Applied Knowledge

- AK0801 Method to calculate and express test results in required format

Internal Assessment Criteria

- IAC0801 Rounding procedure for purity and germination fractions is explained
- IAC0802 Priority order of components is explained
- IAC0803 Application of tolerances is explained
- IAC0804 Out of tolerance tests are explained
- IAC0805 Incubation intervals and total duration of the test are determined
- IAC0806 Calculations are performed and the test results are expressed in the required format

4.2.9. PM-04-PS09: Compile a seed analysis report

Scope of Practical Skill

Given a controlled learning environment, finalised work cards, documentation, ISTA Rules, calculators, calendars, example or template of report ,PC and printer the learner must be able to:

- PA0901 Ensure compliance with all requirements for issuance
- PA0902 Complete information on report according to prescribed procedure
- PA0903 Report test results in accordance with the rules for calculating, expressing and reporting results
- PA0904 Complete all relevant information and sign report as per ISTA Rules

Applied Knowledge

- AK0901 Method to calculate and express test results in required format

- AK0902 Methods for the recording and reporting of seed test results

Internal Assessment Criteria

- IAC0901 Compliance criteria are explained
- IAC0902 Compulsory information required in report is listed and explained
- IAC0903 Format used for purity and germination percentages is explained
- IAC0904 Additional information regarding other determinations is explained
- IAC0905 A PC and printer are used competently to generate a report
- IAC0906 Reports are compiled accurately and completely

4.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Structured examples and scenarios
- Learner instructions and work sheets
- Assessment instruments and standards for each practical skill that clearly defines standards of competence as competent or not yet competent
- Reflective learning exercises

Human Resource Requirements:

- Facilitators with subject matter expertise
- Learner facilitator ratio of 1:15
- Assessors with recognised assessment practice training and subject matter expertise
- Internal assessors can be the same person as the facilitator

Legal Requirements:

- Compliance with occupational health and safety protection regulations

4.4 Exemptions

- None recognised

5. 684301000-PM-05, Apply laboratory quality standards and legislative requirements to ensure accurate, reproducible and reliable seed testing quality outputs and traceability, NQF Level 5, Credits 10

5.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to apply the technical processes and procedures involved in the application of laboratory quality standards and legislative requirements to industry standards for accurate, reproducible and reliable seed testing quality outputs and traceability.

The learner will be required to:

- PM-05-PS01: Verify accuracy of measuring equipment
- PM-05-PS02: Check specification compliance of growing medium
- PM-05-PS03: Monitor and record temperature readings
- PM-05-PS04: Compare test results against prescribed standards
- PM-05-PS05: Control storage of seed samples, chemicals and work records
- PM-05-PS06: Apply laboratory ethics, practices and housekeeping standards

5.2 Guidelines for Practical Skills

5.2.1. PM-05-PS01: Verify accuracy of measuring equipment

Scope of Practical Skill

Given a controlled learning environment, reports, standards, mass meter, check weights, data loggers, thermometers, kernel counters, operating manual/s for equipment the learner must be able to:

- PA0101 Verify readings according to set standards
- PA0102 Complete records
- PA0103 Correct deviations using prescribed corrective actions
- PA0104 Follow quality assurance programme to ensure that all equipment is serviced, calibrated and verified

Applied Knowledge

- AK0101 Laboratory equipment application and maintenance standards

Internal Assessment Criteria

- IAC0101 Verification and recording of measuring equipment are explained
- IAC0102 Calibration intervals for various pieces of measuring equipment are explained
- IAC0103 Out of tolerance equipment is correctly handled
- IAC0104 Use, verification and recording of measuring equipment are performed
- IAC0105 Records and reports are completed

5.2.2. PM-05-PS02: Check specification compliance of growing medium

Scope of Practical Skill

Given a controlled learning environment and ISTA rules, PH meter, buffers, water retention test equipment, seed to test paper toxicity, sand, sieves, mass meter, counting boards, vacuum counters, operating manuals the learner must be able to:

- PA0201 Test growing media according to specifications in ISTA Rules
- PA0202 Compare results to set standard
- PA0203 Approve substrate for use or reject growing media

Applied Knowledge

- AK0201 Laboratory consumable material standards and practices

Internal Assessment Criteria

- IAC0201 Growing media characteristics are explained
- IAC0202 Reasons for testing growth media are explained
- IAC0203 Correct use of PH meter is demonstrated
- IAC0204 Growing media is approved or rejected

5.2.3. PM-05-PS03: Monitor and record temperature readings

Scope of Practical Skill

Given a controlled learning environment, temperature measuring device/s, records, calibrated thermometer, ISTA rules and handbooks the learner must be able to:

- PA0301 Use a calibrated thermometer to verify operational temperature measuring device/s as per procedures and document results
- PA0302 Use a verified temperature measuring device to measure temperature readings
- PA0303 Complete records and document deviations
- PA0304 Address deviations using prescribed corrective actions

Applied Knowledge

- AK0301 Laboratory equipment application and maintenance standards

Internal Assessment Criteria

- IAC0301 Calibration and verification of temperature measuring device are explained
- IAC0302 Prescribed measurement uncertainties are explained
- IAC0303 Methods are applied to verify operational temperature measuring device
- IAC0304 Temperature readings are accurately taken

- IAC0305 Temperature measurements are correctly recorded

5.2.4. PM-05-PS04: Compare test results against prescribed standards

Scope of Practical Skill

Given a controlled learning environment, standards, Plant Improvement Act, SA Seed Certification Scheme the learner must be able to:

- PA0401 Interpret applicable legislative documentation and establish the status of the sample and seed kind
- PA0402 Compare findings against minimum requirements for seed kind
- PA0403 Confirm comparison with seed specimen/s in reference collection
- PA0404 Record and document decision made in terms of the relevant sample

Applied Knowledge

- AK0401 The Plant Improvement Act, 1976 (Act 53 of 1976)
- AK0402 Registration of a seed testing laboratory
- AK0403 Provisions relating to seed and seed samples (Table 4)
- AK0404 SA Seed Certification Scheme

Internal Assessment Criteria

- IAC0401 Relevant legislative documents are listed and explained
- IAC0402 Standards are interpreted and explained
- IAC0403 Standards are correctly applied
- IAC0404 Records and documentation are correctly handled

5.2.5. PM-05-PS05: Control storage of seed samples, chemicals and work records

Scope of Practical Skill

Given a controlled learning environment, seed samples, chemicals and records, Plant Improvement Act, ISTA Rules the learner must be able to:

- PA0501 Store a seed sample
- PA0502 Store the relevant work record
- PA0503 Store chemicals as per manufacturer

Applied Knowledge

- AK0501 Seed sample storage practices and procedures

Internal Assessment Criteria

- IAC0501 Storage procedure and duration are explained
- IAC0502 Disposal practice for treated seed is explained
- IAC0503 Safety procedures for storage and disposal of chemicals are explained
- IAC0504 Seed sample, records and chemicals are stored according to workplace procedures
- IAC0505 Storage records are correctly completed

5.2.6. PM-05-PS06: Apply laboratory ethics, practices and housekeeping standards

Scope of Practical Skill

Given a controlled learning environment, standards, procedures, documentation, records the learner must be able to:

- PA0601 Apply ethical principles in a seed testing laboratory
- PA0602 Apply safety and health measures in accordance with legislation and prescribed procedures
- PA0603 Apply rules and standards for handling, packaging and storage to safeguard the integrity of samples and documents
- PA0604 Check all documents to ensure that appropriate, current editions are available
- PA0605 Apply quality check testing and applicable monitoring control procedures
- PA0606 Record and report deviations or non-conformances where applicable

Applied Knowledge

- AK0601 Principles of ethics in seed testing laboratories
- AK0602 Statutory occupational health and safety requirements
- AK0603 Seed sample storage practices and procedures
- AK0604 Documentation and amendment control system

Internal Assessment Criteria

- IAC0601 The consequences of not applying laboratory and housekeeping practices are explained
- IAC0602 Proper use of and discarding of chemicals are described
- IAC0603 Laboratory practices and housekeeping standards are correctly applied
- IAC0604 The seed testing area is assessed for conformance to laboratory and housekeeping standards

5.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Structured examples and scenarios

- Learner instructions and work sheets
- Assessment instruments and standards for each practical skill that clearly defines standards of competence as competent or not yet competent
- Reflective learning exercises

Human Resource Requirements:

- Facilitators with subject matter expertise
- Learner facilitator ratio of 1:15
- Assessors with recognised assessment practice training and subject matter expertise
- Internal assessors can be the same person as the facilitator

Legal Requirements:

- Compliance with occupational health and safety protection regulations

5.4 Exemptions

- None recognised

SECTION 3C: WORK EXPERIENCE MODULE SPECIFICATIONS

List of Work Experience Module Specifications

- 684301000-WM-01, Sampled and graded grains and oilseeds, NQF Level 3, Credits 24
- 684301000-WM-02, Sample a range of seed lots, NQF Level 3, Credits 15
- 684301000-WM-03, Administration and inspection procedures of seed unit to ensure varietal pure seeds for certification, NQF Level 4, Credits 30
- 684301000-WM-04, Determine the physical and physiological quality of seed, NQF Level 5, Credits 40
- 684301000-WM-05, Assure laboratory quality standards and legislative compliance, NQF Level 5, Credits 11

1. 684301000-WM-01, Sampled and graded grains and oilseeds, NQF Level 3, Credits 24

1.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

Collect and prepare representative samples and grade grains and oilseeds during intake or dispatch operations in accordance with grading standards, regulatory requirements and safety procedures.

The learner will be required to:

- WM-01-WE01: Collect and prepare a grain/oilseed consignment sample for grading
- WM-01-WE02: Grade grains and oilseeds

1.2 Guidelines for Work Experiences

1.2.1. WM-01-WE01: Collect and prepare a grain/oilseed consignment sample for grading

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 Collect the prescribed primary samples of a grain/oilseed consignment
- WA0102 Obtain a working sample and a file sample
- WA0103 Complete the required documentation

Supporting Evidence

- SE0101 Sampling and grading documents
- SE0102 Standard workplace records

1.2.2. WM-01-WE02: Grade grains and oilseeds

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0201 Attend to all pre-grading preparation activities in accordance with workplace procedures
- WA0202 Measure, prepare, analyse and grade samples of grains/oilseeds of at least four varieties in accordance with statutory requirements
- WA0203 Maintain grading standards during work pressure situations such as high volumes and borderline deviations
- WA0204 Attend to queries and requests received from line managers and customers on grading standards allocated with confidence
- WA0205 Apply workplace procedures for the retention of file samples
- WA0206 Apply applicable workplace procedures for non-conforming grain or oilseed consignments

- WA0207 Allocate graded consignment to the nominated storage area according to the storage specifications of the workplace
- WA0208 Complete the documentation for receiving, grading and storage allocation according to workplace procedures

Supporting Evidence

- SE0201 Sampling and grading documents
- SE0202 Standard workplace records

1.3 Contextualised Workplace Knowledge

1 Workplace practices and standards

2 Workplace reporting structures

1.4 Criteria for Workplace Approval

Physical Requirements:

- Standard documentation on protocols and procedures
- Standard reporting documentation

Human Resource Requirements:

- Subject matter expert trained in coaching and mentoring
- Learner expert ratio of 1:5

Legal Requirements:

- None specified in addition to workplace specific regulatory requirements

1.5 Additional Assignments to be Assessed Externally

None specified

2. 684301000-WM-02, Sample a range of seed lots, NQF Level 3, Credits 15

2.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

Attend to the critical role of seed sampling in accordance with ISTA rules and approved methods and techniques to ensure that sampling is representative of the entire seed lot for the purposes of issuance of a seed analysis certificate (domestic or international), quality control, or other official purposes for a period of at least 6 weeks.

The learner will be required to:

- WM-02-WE01: Sample a range of seed lots in accordance with ISTA rules

2.2 Guidelines for Work Experiences

2.2.1. WM-02-WE01: Sample a range of seed lots in accordance with ISTA rules

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 Attend to the examine of a at least 5 seed lots for compliance with requirements in the ISTA Rules including all communication with stakeholders, verification and confirmation of information of information and descriptions, sampling and authenticity requirements
- WA0102 Attend primary sampling of at least 5 seed lots in accordance with ISTA Rules including establishment of sampling intensity required, collection of representative samples using a range of sampling equipment and techniques, ascertaining seed lot homogeneity, completion of records and administration
- WA0103 Attend to all activities to obtain a submitted sample in accordance with ISTA rules including obtaining a composite sample, sample reduction procedure, moisture testing and duplicate samples
- WA0104 Attend to the sealing and marking/labelling of at least 5 seed lots in accordance with standard procedures
- WA0105 Attend to the packing, sealing, marking/labelling and despatching of a range of submitted sample for testing as per seed testing requirements

Supporting Evidence

- SE0101 None

2.3 Contextualised Workplace Knowledge

1 Standard operating procedures for non-compliance with ISTA requirements

2 Workplace specific documentation and communication procedures

3 Safety rules and regulations (safe work practices and consequences if ignored)

2.4 Criteria for Workplace Approval

Physical Requirements:

- Standard documentation on protocols and procedures
- Standard reporting documentation

Human Resource Requirements:

- Subject matter expert trained in coaching and mentoring
- Learner expert ratio of 1:5

Legal Requirements:

- None specified in addition to workplace specific regulatory requirements

2.5 Additional Assignments to be Assessed Externally

None specified

3. 684301000-WM-03, Administration and inspection procedures of seed unit to ensure varietal pure seeds for certification, NQF Level 4, Credits 30

3.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

Deal with the complexities of assessing the varietal identity and purity of seed crops at various stages and times during the seed production processes in compliance with statutory requirements and procedures stipulated in the SA Seed Certification Scheme for at least 12 weeks.

The learner will be required to:

- WM-03-WE01: None

3.2 Guidelines for Work Experiences

3.2.1. WM-03-WE01: None

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 None

Supporting Evidence

- SE0101 None

3.3 Contextualised Workplace Knowledge

1 Reporting structures and procedures

2 Standard operating procedures

3 Workplace specific documentation and communication procedures

4 Safety rules and regulations (safe work practices and consequences if ignored)

3.4 Criteria for Workplace Approval

Physical Requirements:

- Standard documentation on protocols and procedures
- Standard reporting documentation

Human Resource Requirements:

- Subject matter expert trained in coaching and mentoring
- Learner expert ratio of 1:5

Legal Requirements:

- None specified in addition to workplace specific regulatory requirements

3.5 Additional Assignments to be Assessed Externally

None specified

4. 684301000-WM-04, Determine the physical and physiological quality of seed, NQF Level 5, Credits 40

4.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

Receive and prepare seed samples for physical and/or physiological quality determination, conduct tests and analyse seed with regard to purity, germination, moisture, vigour and viability determination, record and report findings and deviations in accordance with operational procedures, ISTA rules and legislative requirements.

The learner will be required to:

- WM-04-WE01: Receive, register and prepare a submitted seed sample for analysis

4.2 Guidelines for Work Experiences

4.2.1. WM-04-WE01: Receive, register and prepare a submitted seed sample for analysis

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 Attend to sample receiving, recording, weighing, registration and preparation practices in accordance with workplace practices and procedures
- WA0102 Prepare a range of seed sample for analysis by preparing working samples from the submitted sample using a reduction method prescribed in the ISTA Rules
- WA0103 Perform a physical purity analysis for a range of seed samples according to ISTA rules and laboratory procedures. Purity analysis includes following the prescribed methods for the specific species, separating the sample into component parts namely pure seed, inert matter and other seed, describe component parts weigh, record and package component parts
- WA0104 Prepare a range of seed samples for the specific species and tests according to ISTA rules and laboratory procedures including sample reduction, recording and documentation, preparation of germination substrate, planting of seeds, placement in germinators for incubation
- WA0105 Determine germination potential for a range of seeds in accordance with the specific ISTA rules and laboratory procedure for the species. This involves application of technical judgement to determine germination potential, document and record results, dividing seedlings into normal and abnormal seedlings, dead seeds, hard seeds and fresh seeds
- WA0106 Determine the viability of a range of seeds according to prescribed ISTA rules and laboratory procedures for the specific species. This involves obtaining a working sample using methods as prescribed by the ISTA Rules, pre-treatment of seed according to the specified time, staining of seed, seed evaluation and recording of results
- WA0107 Determine the vigour of a range of seeds according to ISTA rules and laboratory procedures for the specific species. This involves applying the appropriate test method/s and equipment according to ISTA rules and handbook on vigour, preparation of working samples and equipment in accordance with the selected method/s, incubation of the sample, evaluation of seed and/or seedlings and recording results

- WA0108 Determine the moisture content of a range of seeds according to ISTA rules and laboratory procedures for the specific species. This involves the application of the prescribed method and procedure for moisture determination of the specific crop type, sample reduction, weighing and recording mass before drying, drying of samples, weighing and recording mass after drying and determine and record moisture content
- WA0109 Record and report analysis results in accordance with operating procedures and ISTA rules including calculation of results as per ISTA rules, comply with criteria for issuance of an analysis report as per ISTA rules and legislation, completion of report to indicate the required information, reporting of results as prescribed for the analysis, reporting of additional information as per procedure

Supporting Evidence

- SE0101 Standard workplace reports and records

4.3 Contextualised Workplace Knowledge

1 Data recording systems

2 Laboratory management systems

3 Laboratory ethics

4 Reporting structures and procedures

5 Organisational structures and roles

6 Safety rules and regulations (safe work practices and consequences if ignored)

4.4 Criteria for Workplace Approval

Physical Requirements:

- Standard documentation on protocols and procedures
- Standard reporting documentation

Human Resource Requirements:

- Subject matter expert trained in coaching and mentoring
- Learner expert ratio of 1:5

Legal Requirements:

- None specified in addition to workplace specific regulatory requirements

4.5 Additional Assignments to be Assessed Externally

Make a seed reference collection that is to be presented at the external assessment and will be returned.

5. 684301000-WM-05, Assure laboratory quality standards and legislative compliance, NQF Level 5, Credits 11

5.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

Produce accurate, reproducible and reliable seed testing outputs and traceability in accordance with seed testing laboratory accreditation standards and legislative requirements.

The learner will be required to:

- WM-05-WE01: Comply with laboratory quality standards and legislative requirements

5.2 Guidelines for Work Experiences

5.2.1. WM-05-WE01: Comply with laboratory quality standards and legislative requirements

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 Conduct calibration and verification of sampling, measuring and seed testing equipment including determining of specifications (ECS), verifying the condition and accuracy of seed testing equipment, calibration of seed testing equipment, tag equipment to indicating current calibration status, verifying equipment calibration according to prescribed frequencies and tolerances, record/log the results of each calibration, service and repair
- WA0102 Monitor, measure, adjust and record ambient and apparatus temperatures
- WA0103 Perform phytotoxicity tests including planting of seeds on a reference substrate as well as substrate that is being checked as prescribed in the Handbook for Seedling Evaluation, evaluating seedlings, analysing results using appropriate statistical tests, interpret results of pH test combined with phytotoxicity test to make an informed decision before releasing media for laboratory use, record decisions, declare substrate suitable or reject for use
- WA0104 Measure water holding capacity and determine sand particle size of a range of growing media including establish the dry mass of substrate and containers, saturate defined weighed media in a container as prescribed, dry to field capacity by draining excess water without loss of substrate or evaporation over 12 hours, apply formula to adjust water holding capacity to maximum capacity for each substratum, determine sand particle size, evaluate sand particles to establish uniformity and particle shape, sieve sand with prescribed sieve sizes to determine percentage of particle sizes, analyse results, record and document findings
- WA0105 Determine pH level of germination paper and water by drawing samples from growing media, conducting pH test as prescribed by measuring the pH of different media batches, analyse results, apply standard to establish compliance, record results
- WA0106 Apply laboratory practices and housekeeping standards including safety and health protection measures, rules and standards for handling, packaging and storage to safeguard the integrity of samples, control measures to prevent damage to samples by rodents, pests and exposure to extreme variations in temperature and moisture
- WA0107 Ensure that authorised editions of appropriate documents are available where operations essential to the effective functioning of the laboratory are performed

- WA0108 Maintain sample storage and disposal practices including the disposal of expired samples in accordance with legislative requirements and procedures
- WA0109 Maintain laboratory records, documentation and data including disposal of expired documents in accordance with legislative requirements and procedures, maintenance of a current record system to suit the particular laboratory circumstances, maintain the available and current data system relevant to the work of the laboratory

Supporting Evidence

- SE0101 Standard workplace reports and records

5.3 Contextualised Workplace Knowledge

1 Data recording systems

2 Laboratory management systems

3 Laboratory ethics

4 Reporting structures and procedures

5 Laboratory accreditation system

5.4 Criteria for Workplace Approval

Physical Requirements:

- Standard documentation on protocols and procedures
- Standard reporting documentation

Human Resource Requirements:

- Subject matter expert trained in coaching and mentoring
- Learner expert ratio of 1:5

Legal Requirements:

- None specified in addition to workplace specific regulatory requirements

5.5 Additional Assignments to be Assessed Externally

None specified

SECTION 4: STATEMENT OF WORK EXPERIENCE

Curriculum Number:	684301000
Curriculum Title:	Crop Produce Analyst

Learner Details	
Name:	
ID Number:	

Employer Details	
Company Name:	
Address:	
Supervisor Name:	
Work Telephone:	
E-Mail:	

684301000-WM-01, Sampled and graded grains and oilseeds, NQF Level 3, Credits 24

WM-01-WE01	Collect and prepare a grain/oilseed consignment sample for grading		
	Scope Work Experience	Date	Signature
WA0101	Collect the prescribed primary samples of a grain/oilseed consignment		
WA0102	Obtain a working sample and a file sample		
WA0103	Complete the required documentation		
	Supporting Evidence	Date	Signature
SE0101	Sampling and grading documents		
SE0102	Standard workplace records		
WM-01-WE02	Grade grains and oilseeds		
	Scope Work Experience	Date	Signature
WA0201	Attend to all pre-grading preparation activities in accordance with workplace procedures		
WA0202	Measure, prepare, analyse and grade samples of grains/oilseeds of at least four varieties in accordance with statutory requirements		
WA0203	Maintain grading standards during work pressure situations such as high volumes and borderline deviations		
WA0204	Attend to queries and requests received from line managers and customers on grading standards allocated with confidence		
WA0205	Apply workplace procedures for the retention of file samples		
WA0206	Apply applicable workplace procedures for non-conforming grain or oilseed consignments		

WA0207	Allocate graded consignment to the nominated storage area according to the storage specifications of the workplace		
WA0208	Complete the documentation for receiving, grading and storage allocation according to workplace procedures		
	Supporting Evidence	Date	Signature
SE0201	Sampling and grading documents		
SE0202	Standard workplace records		

	Contextualised Workplace Knowledge	Date	Signature
1	Workplace practices and standards		
2	Workplace reporting structures		

	Additional Assignments to be Assessed Externally	Date	Signature
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684301000-WM-02, Sample a range of seed lots, NQF Level 3, Credits 15

WM-02-WE01	Sample a range of seed lots in accordance with ISTA rules		
	Scope Work Experience	Date	Signature
WA0101	Attend to the examine of a at least 5 seed lots for compliance with requirements in the ISTA Rules including all communication with stakeholders, verification and confirmation of information of information and descriptions, sampling and authenticity requirements		

WA0102	Attend primary sampling of at least 5 seed lots in accordance with ISTA Rules including establishment of sampling intensity required, collection of representative samples using a range of sampling equipment and techniques, ascertaining seed lot homogeneity, completion of records and administration		
WA0103	Attend to all activities to obtain a submitted sample in accordance with ISTA rules including obtaining a composite sample, sample reduction procedure, moisture testing and duplicate samples		
WA0104	Attend to the sealing and marking/labelling of at least 5 seed lots in accordance with standard procedures		
WA0105	Attend to the packing, sealing, marking/labelling and despatching of a range of submitted sample for testing as per seed testing requirements		
	Supporting Evidence	Date	Signature
SE0101	None		

	Contextualised Workplace Knowledge	Date	Signature
1	Standard operating procedures for non-compliance with ISTA requirements		
2	Workplace specific documentation and communication procedures		
3	Safety rules and regulations (safe work practices and consequences if ignored)		

	Additional Assignments to be Assessed Externally	Date	Signature
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684301000-WM-03, Administration and inspection procedures of seed unit to ensure varietal pure seeds for certification, NQF Level 4, Credits 30

WM-03-WE01	None		
	Scope Work Experience	Date	Signature
WA0101	None		
	Supporting Evidence	Date	Signature
SE0101	None		

	Contextualised Workplace Knowledge	Date	Signature
1	Reporting structures and procedures		
2	Standard operating procedures		
3	Workplace specific documentation and communication procedures		
4	Safety rules and regulations (safe work practices and consequences if ignored)		

	Additional Assignments to be Assessed Externally	Date	Signature
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684301000-WM-04, Determine the physical and physiological quality of seed, NQF Level 5, Credits 40

WM-04-WE01	Receive, register and prepare a submitted seed sample for analysis		
	Scope Work Experience	Date	Signature
WA0101	Attend to sample receiving, recording, weighing, registration and preparation practices in accordance with workplace practices and procedures		
WA0102	Prepare a range of seed sample for analysis by preparing working samples from the submitted sample using a reduction method prescribed in the ISTA Rules		
WA0103	Perform a physical purity analysis for a range of seed samples according to ISTA rules and laboratory procedures. Purity analysis includes following the prescribed methods for the specific species, separating the sample into component parts namely pure seed, inert matter and other seed, describe component parts weigh, record and package component parts		
WA0104	Prepare a range of seed samples for the specific species and tests according to ISTA rules and laboratory procedures including sample reduction, recording and documentation, preparation of germination substrate, planting of seeds, placement in germinators for incubation		
WA0105	Determine germination potential for a range of seeds in accordance with the specific ISTA rules and laboratory procedure for the species. This involves application of technical judgement to determine germination potential, document and record results, dividing seedlings into normal and abnormal seedlings, dead seeds, hard seeds and fresh seeds		
WA0106	Determine the viability of a range of seeds according to prescribed ISTA rules and laboratory procedures for the specific species. This involves obtaining a working sample using methods as prescribed by the ISTA Rules, pre-treatment of seed according to the specified time, staining of seed, seed evaluation and recording of results		
WA0107	Determine the vigour of a range of seeds according to ISTA rules and laboratory procedures for the specific species. This involves applying the appropriate test method/s and equipment according to ISTA rules and handbook on vigour, preparation of working samples		

	and equipment in accordance with the selected method/s, incubation of the sample, evaluation of seed and/or seedlings and recording results		
WA0108	Determine the moisture content of a range of seeds according to ISTA rules and laboratory procedures for the specific species. This involves the application of the prescribed method and procedure for moisture determination of the specific crop type, sample reduction, weighing and recording mass before drying, drying of samples, weighing and recording mass after drying and determine and record moisture content		
WA0109	Record and report analysis results in accordance with operating procedures and ISTA rules including calculation of results as per ISTA rules, comply with criteria for issuance of an analysis report as per ISTA rules and legislation, completion of report to indicate the required information, reporting of results as prescribed for the analysis, reporting of additional information as per procedure		
	Supporting Evidence	Date	Signature
SE0101	Standard workplace reports and records		

	Contextualised Workplace Knowledge	Date	Signature
1	Data recording systems		
2	Laboratory management systems		
3	Laboratory ethics		
4	Reporting structures and procedures		
5	Organisational structures and roles		
6	Safety rules and regulations (safe work practices and		

	consequences if ignored		
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	Additional Assignments to be Assessed Externally	Date	Signature
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684301000-WM-05, Assure laboratory quality standards and legislative compliance, NQF Level 5, Credits 11

WM-05-WE01	Comply with laboratory quality standards and legislative requirements		
	Scope Work Experience	Date	Signature
WA0101	Conduct calibration and verification of sampling, measuring and seed testing equipment including determining of specifications (ECS), verifying the condition and accuracy of seed testing equipment, calibration of seed testing equipment, tag equipment to indicating current calibration status, verifying equipment calibration according to prescribed frequencies and tolerances, record/log the results of each calibration, service and repair		
WA0102	Monitor, measure, adjust and record ambient and apparatus temperatures		
WA0103	Perform phytotoxicity tests including planting of seeds on a reference substrate as well as substrate that is being checked as prescribed in the Handbook for Seedling Evaluation, evaluating seedlings, analysing results using appropriate statistical tests, interpret results of pH test combined with phytotoxicity test to make an informed decision before releasing media for laboratory use, record decisions, declare substrate suitable or reject for use		
WA0104	Measure water holding capacity and determine sand particle size of a range of growing media including establish the dry mass of substrate and containers, saturate defined weighed media in a container as prescribed, dry to field capacity by draining excess water without loss of substrate or evaporation over 12 hours, apply formula to adjust water holding capacity to maximum capacity for each substratum, determine		

	sand particle size, evaluate sand particles to establish uniformity and particle shape, sieve sand with prescribed sieve sizes to determine percentage of particle sizes, analyse results, record and document findings		
WA0105	Determine pH level of germination paper and water by drawing samples from growing media, conducting pH test as prescribed by measuring the pH of different media batches, analyse results, apply standard to establish compliance, record results		
WA0106	Apply laboratory practices and housekeeping standards including safety and health protection measures, rules and standards for handling, packaging and storage to safeguard the integrity of samples, control measures to prevent damage to samples by rodents, pests and exposure to extreme variations in temperature and moisture		
WA0107	Ensure that authorised editions of appropriate documents are available where operations essential to the effective functioning of the laboratory are performed		
WA0108	Maintain sample storage and disposal practices including the disposal of expired samples in accordance with legislative requirements and procedures		
WA0109	Maintain laboratory records, documentation and data including disposal of expired documents in accordance with legislative requirements and procedures, maintenance of a current record system to suit the particular laboratory circumstances, maintain the available and current data system relevant to the work of the laboratory		
	Supporting Evidence	Date	Signature
SE0101	Standard workplace reports and records		

	Contextualised Workplace Knowledge	Date	Signature
1	Data recording systems		

2	Laboratory management systems		
3	Laboratory ethics		
4	Reporting structures and procedures		
5	Laboratory accreditation system		

	Additional Assignments to be Assessed Externally	Date	Signature
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