



NATIONAL CERTIFICATES (VOCATIONAL)

SUBJECT GUIDELINES

PLANT PRODUCTION NQF LEVEL 2

September 2007

INTRODUCTION

A. What is Plant Production?

Plant Production is a Vocational subject in the Primary Agriculture programme of the National Certificates (Vocational). Plant Production deals with the physiology and anatomy of plants and the establishment of vegetable and agronomic crops and fruits (subtropical and deciduous). The subject covers establishment practices, cultivation, crop management principles, harvesting and post-harvest storage.

B. Why is Plant Production important in the Primary Agriculture programme?

Plant Production is one of the NQF Level 2 to 4 Vocational subjects in the National Certificates (Vocational). Students studying and gaining competence in this subject will fulfil one of the pass requirements in the Primary Agriculture qualification. Gaining skills and techniques in the establishment and management of crops and fruits creates better employment or self-employment opportunities for students when they have completed the programme. It further enables students to enter into higher education.

C. The link between the Plant Production Learning Outcomes and the Critical and Developmental Outcomes

The Learning Outcomes in Plant Production assists students to achieve the Critical and Developmental Outcomes. All the Plant Production Learning Outcomes relate to and promote the following outcomes: self organisation, communication, self development, teamwork, problem-solving, science, technology and information gathering and evaluation.

D. Factors that contribute to achieving Plant Production Learning Outcomes

The following factors will assist students to achieve the Plant Production Learning Outcomes:

- Enabling environment – Plant Production should be presented in a context of small and medium enterprises (SMMEs), emerging small-scale farmers and personal needs.
- Resources – Students must also have access to all the necessary resources depending on the task.
- Experiential exposure – Students must be exposed to practical and appropriately simulated work environments.
- Suitably qualified lecturers – Lecturers should be well informed about legislation, community issues and available support systems from, for example the Departments of Agriculture and Environmental Affairs. They should also possess technical knowledge of Plant Production.

PLANT PRODUCTION – LEVEL 2

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1 DURATION AND TUITION TIME

This is a one-year instructional programme comprising 200 teaching and learning hours. The subject may be offered on a part-time basis provided the student meets all the assessment requirements.

Students with special education needs (LSEN) must be catered for in a way that eliminates barriers to learning.

2 SUBJECT LEVEL FOCUS

The student should be able to demonstrate an understanding of plant and crop production from soil preparation to post-harvest storage.

3 ASSESSMENT REQUIREMENTS

3.1 Internal assessment (50 percent)

All internal assessments must be finalised by an assessor who has been declared competent by an accredited provider. Students have to be prepared for assessment according to the assessment policy of the institution.

3.1.1 Theoretical component

The theoretical component forms 40 percent of the internal assessment mark.

Internal assessment of the theoretical component in Plant Production Level 2 takes the form of observation, class questions, group work, informal group competitions with rewards, individual discussions with students, class, topic and semester tests and internal examinations. Lecturers can observe students when marking exercises from the previous day and asking class questions.

Assignments, case studies and tests can be completed at the end of a topic. Tests and internal examinations must form part of the internal assessment.

3.1.2 Practical component

The practical component forms 60 percent of the internal assessment mark.

Practical components include applications and exercises. All practical components must be indicated in a Portfolio of Evidence (PoE).

Internal assessment of the practical component in Plant Production Level 2 takes the form of assignments, practical exercises, case studies and practical examinations in a simulated environment.

Students may complete practical exercises daily. Assignments and case studies can be completed at the end of a topic. Practical examinations can form part of internal practical assessment.

- **Some examples of practical assessments include, but are not limited to:**

- A. Presentations (lectures, demonstrations, group discussions and activities, practical work, observation, role-play, independent activity, synthesis and evaluation)
- B. Exhibitions by students
- C. Visits undertaken by students based on a structured assignment task
- D. Research
- E. Task performance in a "Structured Environment"

- **Definition of the term "Structured Environment"**

For the purposes of assessment, "Structured Environment" refers to a simulated workplace or workshop environment. Activities in the simulated workplace or environment must be documented in a logbook with a clear listing of the competencies to be assessed. The following information must be contained in the logbook:

- Nature of department or environment in which practical component was achieved
- Learning Outcomes
- Activities in the environment with which to achieve the Learning Outcomes

- Time spent on activities
- Signature of lecturer or supervisor and student

For the logbook to be regarded as valid evidence, it must be signed by an officially assigned supervisor.

• Evidence in practical assessments

All evidence pertaining to evaluation of practical work must be reflected in the students' Portfolio of Evidence (PoE). The tools and instruments constructed and used to conduct these assessments must be clear from the evidence contained in the Portfolio of Evidence (PoE).

3.1.3 Processing of internal assessment mark for the year

A year mark out of 100 is calculated by adding the marks of the theoretical component (40 percent) and the practical component (60 percent) of the internal continuous assessment (ICASS).

3.1.4 Moderation of internal assessment mark

Internal assessment is subjected to internal and external moderation procedures as set out in the *National Examinations Policy for FET College Programmes*.

3.2 External assessment (50 percent)

A National Examination is conducted annually in October or November by means of a paper(s) set and moderated externally. A practical component will also be assessed.

External assessment details and procedures are set out in *Assessment Guidelines: Plant Production (Level 2)*.

4 WEIGHTED VALUES OF TOPICS

TOPICS	WEIGHTED VALUE
1. Plant Anatomy and Physiology	30%
2. Vegetable Production	70%
TOTAL	100%

5 CALCULATION OF FINAL MARK

Internal assessment mark: Student's mark/100 x 50 = a mark out of 50 (a)

Examination mark: Student's mark/100 x 50 = a mark out of 50 (b)

Final mark: (a) + (b) = a mark out of 100

All marks are systematically processed and accurately recorded to be available as hard copy evidence for, amongst others, reporting, moderation and verification purposes.

6 PASS REQUIREMENTS

The student must obtain at least fifty (50) percent in ICASS and fifty (50) percent in the examination.

7 SUBJECT AND LEARNING OUTCOMES

On completion of Plant Production Level 2, the student should have covered the following topics:

Topic 1: Plant Anatomy and Physiology

Topic 2: Vegetable Production

7.1 Topic 1: Plant Anatomy and Physiology

Subject Outcome 1: Describe the morphology and physiology of plants to acquire a good understanding of the processes of respiration and nutrient and water uptake and transport by photosynthesis, flowering and seeds-set in plants.

RANGE: Morphology and physiology of plants includes differences between monocotyledonous and dicotyledonous plants but does not include differences between their vascular systems and metabolisms.

Learning Outcomes:

The student should be able to:

- Identify the macroscopic and microscopic parts of a plant.
- Explain the role each part plays in the plant.
- Define physiology, morphology, photosynthesis and respiration.
- Explain the process of photosynthesis and respiration in general terms.
- Discuss the plant environment in terms of climatic requirements, season, aspect, light, temperature and water.
- Explain the interrelationships between the above concepts.

Subject Outcome 2: Describe the impact of morphology and physiology on plant reproduction, crop yield and on-farm storage to evaluate and assess all procedures and techniques of soil preparation, planting, growing, harvesting and post-harvest on-farm storage.

Learning Outcomes:

The student should be able to:

- Explain how plants reproduce from pollination to fruit growth and set.
- Explain how morphology and physiology impact on plant reproduction.
- Explain how morphology and physiology impact on crop yield and include yield measurement per unit area.

7.2 Topic 2: Vegetable Production

Subject Outcome 1: Cultivate vegetables using appropriate procedures.

Learning Outcomes:

The student should be able to:

- Establish what principles govern vegetable production.
- Select a crop suitable to the climatic and soil conditions.
- Prepare the soil following the requirements of the selected crop.
- Plant the crop according to set procedures (spacing, fertiliser application, watering, etc.)
- Monitor the development of the crop (pest and disease control, weed control, application of fertilisers, etc.) until harvest.
- Apply suitable post-harvest or on-farm storage procedures for crop.
- Examine (briefly) the production of vegetables in hydroponic systems, its benefits and drawbacks.

Subject Outcome 2: Schedule and operate irrigation according to workplace conditions.

Learning Outcomes:

The student should be able to:

- Define irrigation and present the parameters that govern its use.
- Identify and explain the different types of irrigation methods.
- Select the irrigation method most suited to the identified crop.
- Identify and explain the different elements of an irrigation schedule with special regard to its timing and the movement of equipment.
- Develop an irrigation schedule for the workplace.
- Use the schedule designed to operate the irrigation.

Subject Outcome 3: List and describe, with examples, methods of weed control.

Learning Outcomes:

The student should be able to:

- Define weed and weed control.
- Explain the importance of weed control.
- Explain the different types of weed and weed control.
- Provide examples of weeds and weed control.

Subject Outcome 4: Investigate pests and diseases affecting crops.

Learning Outcomes:

The student should be able to:

- Define the concept pest in terms of plant production.
- Identify disease in terms of plant production.
- Identify and explain pests and diseases that affect crops.
- Explain how pests and diseases that affect crops can be controlled.

Subject Outcome 5: Carry out proper harvesting and storage and explain principles.

Learning Outcomes:

The student should be able to:

- Explain different harvesting methods using examples.
- Compare and contrast various harvesting methods.
- Practise different harvesting methods.