



Occupational Standards of Competence

Hydroponics Level 2

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ACKNOWLEDGEMENTS

The Technical and Vocational Education and Training Council thanks the following for their contribution to the development of this document:

Agriculture Skill Council of India

Australian Government – National Register on Vocational Education and Training (VET)

NCTVET, Jamaica

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Qualification Overview

NVQB

in

Hydroponics

Level 2

NVQ in Hydroponics – Level 2

Qualification Overview

The NVQB level 2 in Hydroponics aims to provide learners with the knowledge, skills and attitudes related to caring for plants throughout their development in the hydroponic system, including providing plants with the nutrient solutions required to grow, protecting plants from pests, ensuring the environment allows for successful growth and providing basic maintenance to plants.

Who is the Qualification for?

The qualification is designed for individuals working with hydroponics systems within the hydroponics farming industry/horticultural sector. Candidates at this level should have basic level 1 knowledge, skills and understanding relating to basic horticulture practices and activities and be able to contribute to discussions and decision-making processes. The qualification may also assist persons who are seeking entry into the hydroponics sector/area.

Jobs within the occupational area

This qualification is for those working in or wishing to work in any of the following or similar hydroponic roles:

- Greenhouse assistant
- Production assistant
- Assistant grower
- Greenhouse attendant
- Farm attendant

This list is not exhaustive and only serves to illustrate the breadth of the qualification.

A012702 - APPROVED NATIONAL VOCATIONAL QUALIFICATION STRUCTURE

HYDROPONICS - LEVEL 2

To achieve the full qualification, candidates must complete all ten (10) units.

Mandatory Units (All must be completed)

CODES

- | | |
|--|----------------|
| 1. Construct basic hydroponic components | UA61602 |
| 1.1 Prepare a site for hydroponics | |
| 1.2 Prepare to construct a hydroponics system | |
| 1.3 Build the components of a hydroponic system | |
| 1.4 Assemble constructed components of a hydroponic system | |
| 1.5 Test the assembled hydroponics system | |
| 1.6 Prepare and submit records of activities | |
| 2. Install hydroponic systems | UA61702 |
| 2.1 Assess a site for suitability | |
| 2.2 Prepare for installation | |
| 2.3 Establish a hydroponic system | |
| 2.4 Test and calibrate the system | |
| 2.5 Complete installation operations | |
| 3. Identify and select growing media for hydroponics | UA61802 |
| 3.1 Select growing media | |
| 3.2 Install growing media | |
| 3.3 Monitor salt build-up | |
| 4. Implement a maintenance programme for hydroponic systems | UA61902 |
| 4.1 Observe plant health | |
| 4.2 Monitor the hydroponic environment | |
| 4.3 Monitor nutrient solution | |
| 4.4 Monitor and control algae build-up | |
| 4.5 Perform routine maintenance checks | |
| 4.6 Complete monitoring activities | |
| 5. Set up and maintain hydroponic plants | UA62002 |
| 5.1 Propagate seedlings for hydroponic farming | |
| 5.2 Select plants and site for hydroponic farming | |
| 5.3 Maintain hydroponic plants | |
| 5.4 Manage irrigation and fertigation of plants | |
| 5.5 Conduct harvesting activities | |

Mandatory Units (All must be completed)

CODES

6. Protect plants grown under hydroponics

UA62102

- 6.1 Identify nutrient problems
- 6.2 Correct nutrient problems
- 6.3 Identify pest problems
- 6.4 Resolve pest problems
- 6.5 Identify water-related issues
- 6.6 Treat water-related issues

7. Identify and correct hazards in hydroponic environment

UA62202

- 7.1 Work in an environmentally conscious way
- 7.2 Discern hydroponic environmental hazards
- 7.3 Correct hydroponic environmental hazards

8. Manage safety and health in own area of responsibility

UA41703

- 8.1 Evaluate responsibilities and liabilities in relation to safety and health legislation and regulations
- 8.2 Assess and minimise safety and health risks in own area of responsibility
- 8.3 Review health and safety policies in own area of responsibility
- 8.4 Monitor safety and health in own area of responsibility

9. Develop and sustain productive working relationships

U56702

- 9.1 Create productive working relationships
- 9.2 Maintain productive working relationships

10. Plan and organise work

UA11302

- 10.1 Identify work requirements
- 10.2 Prepare the process to complete work
- 10.3 Select tools and equipment
- 10.4 Demonstrate safe and efficient sequence of work
- 10.5 Report outcomes
- 10.6 Clean up

UA61602

Construct basic hydroponic components

Unit Descriptor:

This unit deals with the knowledge, skills and attitudes required to construct basic hydroponics production systems. It outlines the standard required to read and interpret design specifications of different hydroponics systems, horizontal and vertical orientations, preparing the site, preparing the component parts, constructing the components, testing the assembled hydroponics system and recording activities according to industry and organisational requirements.

ELEMENT **PERFORMANCE CRITERIA**

Candidates must be able to:

- | | | |
|--|------------|---|
| <p>1. Prepare a site for hydroponics</p> | <p>1.1</p> | <p>Read and interpret relevant design specifications according to job specifications.</p> |
| | <p>1.2</p> | <p>Clear and prepare the location to set up the hydroponics system.</p> |
| | <p>1.3</p> | <p>Measure and layout the design of the hydroponics system according to job specifications.</p> |
| <p>2. Prepare to construct a hydroponics system</p> | <p>2.1</p> | <p>Read and interpret relevant sections of the design specifications according to job specifications.</p> |
| | <p>2.2</p> | <p>Select prepare and use personal protective equipment according to the job requirements.</p> |
| | <p>2.3</p> | <p>Select materials and fittings to construct the system.</p> |
| | <p>2.4</p> | <p>Select and prepare tools and equipment to construct the system.</p> |
| <p>3. Build the components of a hydroponics system</p> | <p>3.1</p> | <p>Assemble each component according to design specifications.</p> |
| | <p>3.2</p> | <p>Match constructed components to the layout design according to job specifications.</p> |

- | | | |
|---|-----|--|
| | 3.3 | Adjust constructed components as necessary according to job requirements. |
| 4. Assemble constructed components of hydroponic system | 4.1 | Select materials and fittings and assemble components according to job requirements. |
| | 4.2 | Select appropriate tools and equipment to assemble components. |
| | 4.3 | Layout and adjust assembled components according to job specifications. |
| | 4.4 | Complete the final assembly of components according to job specifications. |
| 5. Test the assembled hydroponics system | 5.1 | Check assembled hydroponics systems for leaks. |
| | 5.2 | Check assembled hydroponics system against each design specification standard. |
| 6. Prepare and submit records of activities | 6.1 | Compile the necessary records related to constructing and assembling hydroponics components. |
| | 6.2 | Submit the final project records following organisational procedures. |

RANGE STATEMENT

All range statements must be assessed:

1. **Hydroponics systems** may include but are not limited to:
 - Nutrient Film Technique (NFT)
 - Deep Water Culture (DWC)
 - Ebb and Flow (Flood & Drain)
 - Drip (recovery or non-recovery)
 - Wick
 - Aeroponics
 - Horizontal and vertical orientations
2. **Design specifications** may include but are not limited to:
 - Site location
 - Available space
 - Available water
 - Crops to be grown
 - Quantities to be grown
 - Production schedule
 - Orientation of production system
 - Reservoirs
 - Pumps
 - Preferred materials
 - Growing medium/media
3. **Location** may include but is not limited to:
 - Open/unprotected
 - Greenhouse
 - Shipping container
 - Warehouse
 - Modified room
 - Roof top
4. **Personal protective equipment** may include but is not limited to:
 - Overall or coverall
 - Dust mask or face mask
 - Respirator
 - Earmuffs
 - Goggles
 - Gloves
 - Specialised boots
5. **Tools and equipment** may include but are not limited to:
 - Appropriate site clearing machinery
 - Circle saw/hacksaw
 - Power drills and appropriate drill bits
 - Squares and levels
 - PVC hole saw
 - Vacuum (wet/dry)
 - Pipe cutters
6. **Tests of assembled hydroponics system** may include but are not limited to:
 - Conformation to design specifications
 - Accuracy of layout
 - Performance of water flow
 - Adequacy of reservoirs
 - Suitability of pump
 - Gradient/slope

7. **Records** may include but are not limited to:

- Materials utilised
- Time taken
- Lessons learned
- Deviation from design specifications
- Costs of different project elements

UNDERPINNING KNOWLEDGE AND SKILLS

Candidates must know and understand:

1. Which industry and organisational standards, legislation, codes and regulations are relevant to the workplace.
2. Why it is important to read and interpret relevant design specifications.
3. How to interpret relevant design specifications.
4. What are the types of hydroponics systems.
5. What are the advantages and disadvantages of hydroponics systems.
6. Why it is important to clear and prepare the location to set up the hydroponics system, and how to do so.
7. Why it is important to measure and layout the design of the hydroponics system.
8. How to carry out relevant measurements and calculations of the hydroponics systems.
9. What personal protective equipment (PPE) to select, prepare and use according to job requirements.
10. What materials and fittings to select according to the job requirements.
11. What tools and equipment to select and prepare.
12. Which materials and fittings to select and use for each component.
13. Which tools and equipment to select and use to construct each component.
14. How to construct each component according to job requirements.
15. Why it is important to match the constructed component to the layout design and how to do so.
16. Why it is important to adjust constructed components as necessary-and how to do so.
17. Which materials and fittings and assembled components to select-and how to use them.
18. Which tools and equipment to select to assemble components according to job requirements.
19. How to layout and adjust assembled components according to job specifications.
20. How to complete the final assembly of components according to job specifications.
21. Why it is important to test assembled hydroponics system for leaks, and how to do so.
22. Why it is important to test assembled hydroponics system against each design specification standard and how to do so.
23. Why it is important to compile necessary records related to constructing and assembling hydroponics components and how to do so.
24. Why it is important to make final submission of project records and how to do so.

EVIDENCE GUIDE

For assessment purposes:

(1) Critical Aspects of Evidence

Candidates must prove that they can carry out **all** of the elements, meeting **all** the performance criteria, range and underpinning knowledge **on more than one occasion**. This evidence must come from a real work environment.

(2) Methods of Assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic.

Evidence may be collected in a variety of ways including:

- Observation
- Written/oral questioning
- Written evidence (journals, logbooks, maintenance records, etc.)
- Case studies
- Witness testimony
- Professional discussion
- Products of work

Questioning techniques should not require language, literacy or numeracy skills beyond those required in this unit of competency.

(3) Context of Assessment

This unit may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by a candidate working alone or as part of a team. The assessment environment should not disadvantage the candidate.

The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Simulation **may be used**, where natural work evidence is unlikely to occur.

UA61702**Install hydroponic systems**

Unit Descriptor:

This unit deals with the knowledge, skills and attitudes required to assess a suitable site and to prepare, install and test hydroponic recirculating or non-recirculating systems.

ELEMENT**PERFORMANCE CRITERIA**

Candidates must be able to:

- | | |
|----------------------------------|---|
| 1. Assess a site for suitability | <ul style="list-style-type: none"> 1.1 Evaluate the physical characteristics of the proposed site according to design specifications and layout plans. 1.2 Locate underground services according to site plans if applicable. 1.3 Identify any potential site problems following organisational procedures. 1.4 Identify the environmental implications of installing the system according to industry and organisational procedures. 1.5 Establish and agree on the type and extent of the hydroponic system to be installed according to design specifications and layout plans. |
| 2. Prepare for installation | <ul style="list-style-type: none"> 2.1 Interpret and clarify site plans and design specifications according to job specifications. 2.2 Confirm and arrange equipment, materials and fittings according to design specifications, layout plans and manufacturer's specifications. 2.3 Clear the site for installation according to design specifications and layout plans. 2.4 Plan the site and install drainage channels, water collection and storage facilities according to design specifications. |
| 3. Establish a hydroponic system | <ul style="list-style-type: none"> 3.1 Assemble system components according to design specifications and layout plans. |

- 3.2 Install systems according to design specifications, layout plans and manufacturer's specifications.
 - 3.3 Communicate problems associated with installation to the client or supervisor following organisational procedures.
- 4. Test and calibrate the system
 - 4.1 Check that hydroponics components and nutrient systems are in working order and meet design specifications, layout plans and manufacturer's specifications.
 - 4.2 Regulate equipment according to design specifications, layout plans and manufacturer's specifications.
 - 4.3 Install growing medium according to manufacturer's specifications.
 - 4.4 Check systems according to design specifications, layout plans and manufacturer's specifications.
 - 4.5 Complete check list of testing results according to organisational procedures.
- 5. Complete installation operations
 - 5.1 Clean and store tools and equipment according to organisational procedures and manufacturer's specifications.
 - 5.2 Tidy site and remove and dispose of waste according to manufacturer's specifications, safety and health requirements and organisational procedures.

RANGE STATEMENT

All range statements must be assessed:

1. Physical characteristics may include but are not limited to:

- Slope/gradient
- Aspect
- Water flow
- Air flow

3. Services may include but are not limited to:

- Electrical supply
- Water supply
- CO₂ (indoor)

2. Design specifications may include but are not limited to:

- Site location
- Available space
- Available water
- Crops to be grown
- Quantities to be grown
- Production schedule
- Orientation of production system
- Reservoirs
- Pumps
- Preferred materials
- Growing medium/media

4. Environmental implications may include but are not limited to:

- Pros (higher quality food, reduced water consumption, reduced rate of pest and fungus, improved yield, optional use of space, time saving system)
- Cons (reliance on constant power supply, high level of maintenance and monitoring, susceptible to air and waterborne diseases, requires special expertise, challenge of maintaining sterile environment against bacteria)

5. Hydroponics systems may include but are not limited to:

- Nutrient Film Technique (NFT)
- Deep Water Culture (DWC)
- Ebb and Flow (Flood & Drain)
- Drip (recovery or non-recovery)
- Wick
- Aeroponics
- Horizontal and vertical orientations

7. Systems may include but are not limited to:

- Water treatment systems for re-circulating water (e.g. UV light)
- Pipes
- Emitters
- Pumps
- Filters
- Connectors
- Pressure gauges
- Containers
- Drains
- Associated fixtures
- Thermometers

9. Growing medium may include but is not limited to:

- Rock wool
- Peat moss
- Coco coir
- Inert foam
- Perlite
- Polystyrene
- Styrofoam
- Gravel

6. Equipment and materials may include but are not limited to:

- Equipment (Appropriate site clearing machinery, circle saw, power drills and appropriate drill bits, squares and levels, PVC hole saw)
- Materials and fittings (PVC pipes and troughs/channels, dutch (bato) buckets, various pots, various plumbing fittings, pumps, various hoses)

8. Calibrate may include but is not limited to:

- Determine the volume of application
- Determine the required pressure
- Select the appropriate types of nozzle
- Set up the pumping system
- Prepare sensor and measuring instruments

10. Tools and equipment may include but are not limited to:

- Appropriate site clearing machinery
- Circle saw/hacksaw
- Power drills and appropriate drill bits
- Squares and levels
- PVC hole saw
- Pipe cutters

UNDERPINNING KNOWLEDGE AND SKILLS

Candidates must know and understand:

1. What are the legislation, codes and regulations relevant to the workplace.
2. What are the industry and organisational standards and requirements for installing hydroponic systems.
3. Why it is important to assess the physical characteristics of the proposed site according to design specifications and layout plans and how to do so.
4. Why it is important to locate underground services according to site plans, if applicable and how to do so.
5. How to identify any potential site problems following organisational procedures.
6. What are the environmental implications of installing a hydroponics system.
7. Why it is important to identify the environmental implications of installing the system and how to do so.
8. What are design specifications and layout plans.
9. How to determine and agree on the type and extent of the hydroponic system to be installed according to design specifications and layout plans.
10. Why it is important to interpret and clarify site plans and design and how to do so.
11. Why it is important to confirm and arrange equipment, materials and fittings according to design specifications, layout plans and manufacturer's specifications and how to do so.
12. How to clear the site for installation according to design specifications and layout plans.
13. How to prepare a site, install drainage channels, water collection and storage facilities according to design specifications.
14. How to assemble system components according to design specifications and layout plans.
15. How to install systems according to design specifications, layout plans and manufacturer's specifications.
16. Why it is important to communicate problems associated with installation to the client or supervisor following organisational procedures and when to do so.
17. How to check that hydroponics components and nutrient systems are in working order and meet design specifications, layout plans and manufacturer's specifications.
18. Why it is important to calibrate equipment according to design specifications, layout plans and manufacturer's specifications and how to do so.
19. What are the types of growing media used in hydroponics.
20. How to install growing media according to manufacturer's specifications.

21. Why it is important to test the systems according to design specifications, layout plans and manufacturer's specifications and how to do so.
22. Why it is important to complete a check list of testing results according to organisational procedures and how to do so.
23. Why it is important to clean and store all tools and equipment according to organisational procedures and manufacturer's specifications and how to do so.
24. Why it is important to tidy the site and remove and dispose of waste according to manufacturer's specifications, safety and health requirements and organisational procedures and how to do so.

EVIDENCE GUIDE

For assessment purposes:

1. Critical Aspects of Evidence

Candidates must prove that they can carry out **all** of the elements, meeting **all** the performance criteria, range and underpinning knowledge **on more than one occasion**. This evidence must come from a real work environment.

2. Methods of Assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic.

Evidence may be collected in a variety of ways including:

- Observation
- Written/oral questioning
- Written evidence (journals, logbooks, maintenance records, etc.)
- Case studies
- Witness testimony
- Professional discussion
- Products of work

Questioning techniques should not require language, literacy or numeracy skills beyond those required in this unit of competency.

3. Context of Assessment

This unit may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by a candidate working alone or as part of a team. The assessment environment should not disadvantage the candidate.

The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Simulation **may be used**, where natural work evidence is unlikely to occur.

UA61802

Identify and select growing medium for hydroponics

Unit Descriptor:

This unit deals with the knowledge, skills, and attitudes required to identify, select and install growing medium within the hydroponic environment. It covers the criteria used to select medium, treating of medium, monitoring the condition of medium, and keeping appropriate records according to manufacturer’s specifications and organisational procedures.

ELEMENT **PERFORMANCE CRITERIA**

Candidates must be able to:

- | | |
|---------------------------|---|
| 1. Select growing medium | <ul style="list-style-type: none"> 1.1 Characterise and choose the appropriate growing medium for the intended crop according to the job specifications. 1.2 Decide on the nutrient delivery system according to job specifications and organisational requirements. 1.3 Test the growing system for basic operation according to manufacturer’s requirements. |
| 2. Install growing medium | <ul style="list-style-type: none"> 2.1 Select and wear appropriate personal protective equipment according to occupational safety and health regulations and organisational requirements. 2.2 Prepare growing medium for crops according to manufacturer’s and job requirements. 2.3 Place growing medium into the hydroponic system according to job and manufacturer’s requirements. 2.4 Choose appropriate measuring devices according to manufacturer’s and organisational procedures. 2.5 Test the hydroponic system with the growing medium for basic operation according to job requirements and organisational procedures. |

- 2.6 Treat the growing medium and system according to industry and organisational requirements.
- 2.7 Record activities relating to selecting and installing growing medium following organisational procedures.
- 3. Monitor salt buildup
 - 3.1 Select tools and equipment to monitor salts according to job and organisational requirements.
 - 3.2 Decide on the appropriate unit of measure and calibrate equipment according to job requirements.
 - 3.3 Collect representative samples of nutrient solution or growing medium according to job specifications.
 - 3.4 Insert probe meter into nutrient solution or growing medium according to manufacturer's requirements.
 - 3.5 Read salt concentrations on meter/display following job specifications.
 - 3.6 Record activities relating to monitoring salt build-up according to job requirements and organisational procedures.

RANGE STATEMENT

All range statements must be assessed:

1. Growing medium may include but is not limited to:

- Rock wool
- Peat moss
- Coco coir
- Inert foam
- Perlite
- Polystyrene
- Styrofoam
- Gravel

2. Personal protective equipment may include but is not limited to:

- Overall or coverall
- Dust or face mask
- Respirator
- Goggles
- Gloves
- Specialised boots

3. Hydroponics systems may include but are not limited to:

- Liquid hydro system (no solid medium)
- Substrate hydro system (solid medium - container culture, slab culture, table culture (ebb & flow))
- Gravel culture
- Drip culture
- Vertical set-up

4. Measuring devices may include but are not limited to:

- Thermometer
- Relative humidity meter
- Callipers
- PC meter
- Hygrometer
- Barometer
- Light meter
- pH meter
- Multi-meter for range of parameters
- Appropriate monitoring software
- EC, pH, water temperature meter

5. Equipment may include but is not limited to:

- pH testing (sensors, calibration kits, probes, test strips)
- Buffering solutions (increasing or decreasing pH levels)
- Oxidation Reduction Potential (ORP) testing equipment (sensors, solutions, probes, circuits)
- Electrical Conductivity (EC)
- Reverse Osmosis (RO) filters

6. Unit of measure may include but is not limited to:

- Parts per million (grams of salt per million grams of water) ppm
- Milligrams (salt) per litre (water) mg/L
- Electrical conductivity (deciSiemens per metre) dS/m
- Appropriate monitoring software

7. Representative samples of nutrient solution may include but are not limited to:

- Capture at source
- Capture within growing medium
- Capture at sump

8. Salt build-up may include but is not limited to:

- Calcium deposits in components
- EC in root zone
- Build-up in nutrient distribution components
- Source

UNDERPINNING KNOWLEDGE AND SKILLS

Candidates must know and understand:

1. What are the industry and organisational standards, legislation, codes and regulations relevant to the workplace.
2. What types of growing medium are used in hydroponics.
3. How to determine and select the appropriate growing medium for crops.
4. How to select a nutrient delivery system.
5. Why it is important to test the growing system for basic operation.
6. Why it is important to select and wear appropriate personal protective equipment according to occupational safety and health regulations and how to do so.
7. How to prepare growing medium for crops.
8. How to place growing medium into the hydroponic system according to job requirements.
9. How to select and use measuring devices.
10. Why it is important to test hydroponic systems with growing medium for basic operation.
11. Why it is important to treat growing medium and system according to job requirements and how to do so.
12. Why it is important to record activities relating to selecting and installing growing media following organisational procedures and how to do so.
13. Which tools and equipment to select to monitor salts.
14. What are the appropriate units of measure.
15. How to calibrate equipment.
16. How to select an appropriate unit of measure.
17. What are types of nutrient solutions.
18. Why it is important to collect representative sample of nutrient solution or growing medium, and how to do so.
19. How to insert a probe meter into nutrient solution or growing medium.
20. How to read salt concentrations on meter/display.
21. Why it is important to record activities relating to monitoring salt build-up and how to do so.

EVIDENCE GUIDE

For assessment purposes:

(1) Critical Aspects of Evidence

Candidates must prove that they can carry out **all** of the elements, meeting **all** the performance criteria, range and underpinning knowledge **on more than one occasion**. This evidence must come from a real work environment.

(2) Methods of Assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic.

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- Witness testimony
- Professional discussion
- Products of work

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(3) Context of Assessment

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Simulation **may be used**, where natural work evidence is unlikely to occur.

Unit Descriptor:

This unit deals with the knowledge, skills and attitudes required to implement a maintenance programme for hydroponic growing systems. It includes monitoring and taking action to produce prescribed plant growth and maintaining the structures and systems of a hydroponic unit.

ELEMENT**PERFORMANCE CRITERIA***Candidates must be able to:*

- | | |
|---------------------------------------|--|
| 1. Observe plant health | 1.1 Interpret and clarify workplace information about existing hydroponic systems according to organisational requirements. |
| | 1.2 Assess the growth rate of plants against targets set in the production plan. |
| | 1.3 Assess plants for overall health according to the production plan. |
| | 1.4 Assess plants for the onset of fruit according to production plan. |
| 2. Monitor the hydroponic environment | 2.1 Assess environmental parameters according to the production plan and adjust as required. |
| | 2.2 Collect samples and submit to relevant person for analysis to identify potential sources of contamination. |
| | 2.3 Evaluate and adjust hygiene procedures following organisational safety and health procedures, environmental guidelines and job specifications. |
| | 2.4 Assess the disposal of materials to ensure it follows organisational safety and health procedures and environmental guidelines. |
| 3. Monitor nutrient solution | 3.1 Identify the properties of nutrient solutions following manufacturer's specifications. |

- 3.2 Take samples of nutrient solutions for testing and analysis to determine correct level of nutrient.
 - 3.3 Interpret and discuss the results of tests and analysis with the relevant person.
 - 3.4 Modify nutrient solutions to ensure the correct balance of ingredients according to manufacturer's specifications.
- 4. Monitor and control algae growth
 - 4.1 Evaluate the hydroponic system for algae growth regularly following organisational procedures.
 - 4.2 Sanitise tools and equipment before and after each use to prevent the spread of algae spores.
 - 4.3 Implement appropriate lighting and nutrient management techniques to inhibit algae growth following organisational procedures.
 - 4.4 Clean the hydroponic system to prevent the growth of algae following organisational procedures.
 - 4.5 Apply algae-inhibiting products following manufacturer's instructions and organisational procedures.
- 5. Perform routine maintenance checks
 - 5.1 Inspect buildings and structures for wear and tear according to site plan and organisational safety and health procedures.
 - 5.2 Check the equipment for delivering the nutrient solution according to manufacturer's specifications and the equipment design requirements.
 - 5.3 Check equipment controlling the atmospheric and root zone environments according to manufacturer's specifications.
- 6. Complete monitoring activities
 - 6.1 Report problems to the relevant person following organisational procedures.

- 6.2 Record all checks and report to the relevant person following organisational procedures.

RANGE STATEMENT

All range statements must be assessed:

- 1. Hydroponics systems** may include but are not limited to:
 - Nutrient Film Technique (NFT)
 - Deep Water Culture (DWC)
 - Ebb and flow (Flood & Drain)
 - Drip (recovery or non-recovery)
 - Wick
 - Aeroponics
 - Horizontal and vertical orientations
- 2. Environmental parameters** may include but are not limited to:
 - Temperature (climate control)
 - Light
 - Humidity
 - CO2 concentration
 - Wind
- 3. Contamination** may include but is not limited to:
 - Dirt on boots and clothing
 - Foreign materials
 - Smoke
 - Pathogens
- 4. Properties of the nutrient solutions** may include but are not limited to:
 - pH
 - Electrical conductivity
 - Nutrient content
 - Supplements and additives
- 5. Algae-inhibiting products** may include but are not limited to:
 - Chemical methods for controlling algae
 - Biological methods for controlling algae
- 6. Equipment** may include but is not limited to:
 - pH Testing equipment (sensors, calibration kits, probes)
 - Buffering solutions (increasing or decreasing pH levels)
 - Oxidation Reduction Potential (ORP) testing equipment (sensors, solutions, probes, circuits)
 - Electrical Conductivity (EC)
 - Reverse Osmosis (RO) system
 - Nutrient testing equipment

7. Design specifications may include but are not limited to:

- Site location
- Available space
- Available water
- Power source
- Crop to be grown
- Quantities to be grown
- Production schedule
- Orientation of production system
- Reservoirs
- Pumps
- Preferred materials
- Growing medium/media

8. Records may include but are not limited to:

- Materials utilised
- Time taken
- Lessons learned
- Any deviation from design specifications
- Costs of different project elements
- Yields
- Germination rates/percentage

UNDERPINNING KNOWLEDGE AND SKILLS

Candidates must know and understand:

1. What are the industry and organisational procedures related to implementing a maintenance programme for hydroponic systems.
2. What are the hazards in the workplace and the safe work procedures to be implemented.
3. How to interpret and clarify workplace information about existing hydroponic systems.
4. Why it is important to assess the growth rate of plants against targets set in the production plan and how to do so.
5. How to assess plants for overall health according to production plan.
6. Why it is important to assess plants for the onset of fruit and how to do so.
7. What are the environmental parameters in hydroponics systems.
8. Why it is important to monitor environmental parameters according to the production plan and adjust as required.
9. How to monitor and test environmental parameters according to the production plan and adjust as required.
10. Why it is important to collect samples and submit to relevant persons for analysis and how to do so.
11. What are the potential sources of contamination in hydroponics systems.
12. Why it is important to identify potential sources of contamination and how to do so.
13. Why it is important to monitor and adjust hygiene procedures following organisational safety and health procedures, environmental guidelines and job specifications and how to do so.
14. Why it is important to monitor the disposal of materials to ensure it follows organisational safety and health procedures and environmental guidelines and how to do so.
15. What are the different types of nutrient solutions.
16. How to monitor and test nutrient solutions.
17. How to identify the properties of nutrient solutions.
18. How to take samples of nutrient solution for testing and analysis.
19. Why it is important to interpret and discuss results of the test and analysis with the supervisor and how to do so.
20. How to modify nutrient solutions to ensure the correct balance of ingredients.
21. What are algae.
22. What are the signs of algae growth.
23. What are the cause and effect of algae growth on hydroponic plants.
24. Why it is important to inspect the hydroponic system for algae growth regularly following organisational procedures and how to do so.

25. Why it is important to sanitise tools and equipment before and after each use and how to do so.
26. How to implement appropriate lighting and nutrient management techniques to inhibit algae growth following organisational procedures.
27. What are the methods for controlling algae growth.
28. Why it is important to clean a hydroponic system to prevent the growth of algae following organisational procedures and how to do so.
29. How to apply algae-inhibiting products following manufacturer's instructions and organisational procedures.
30. Why it is important to inspect buildings and structures for wear and tear according to site plans and organisational safety and health procedures and how to do so.
31. How to test and calibrate hydroponic equipment.
32. Why it is important to check equipment for delivering nutrient solution according to manufacturer's specifications and design requirements and how to do so.
33. Why it is important to check equipment controlling the atmospheric and root zone environments and how to do so.
34. Why it is important to report problems to relevant person and how to do so.
35. Why it is important to record all checks and report to relevant person and how to do so.

EVIDENCE GUIDE

For assessment purposes:

(1) Critical Aspects of Evidence

Candidates must prove that they can carry out **all** of the elements, meeting **all** the performance criteria, range and underpinning knowledge **on more than one occasion**. This evidence must come from a real work environment.

(2) Methods of Assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic.

Evidence may be collected in a variety of ways including:

- Observation
- Written/oral questioning
- Written evidence (journals, logbooks, maintenance records, etc.)
- Case studies
- Witness testimony
- Professional discussion
- Products of work

Questioning techniques should not require language, literacy or numeracy skills beyond those required in this unit of competency.

(3) Context of Assessment

This unit may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by a candidate working alone or as part of a team. The assessment environment should not disadvantage the candidate.

The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Simulation **may be used** where natural work evidence is unlikely to occur.

UA62002

Set up and maintain hydroponic plants

Unit Descriptor:

This unit deals with the knowledge, skills and attitudes required to propagate seedlings, select plants and a relevant site for hydroponics, harvest plants and maintain the hydroponic system and plants.

ELEMENT **PERFORMANCE CRITERIA**

Candidates must be able to:

- | | | |
|---|------------|--|
| <p>1. Propagate seedlings for hydroponic farming</p> | <p>1.1</p> | <p>Select the appropriate growing medium for seed germination, ensuring that it has the required characteristics in accordance with job specifications.</p> |
| | <p>1.2</p> | <p>Sterilise growing medium before use according to manufacturer’s instructions.</p> |
| | <p>1.3</p> | <p>Select nursery containers for the growth of plants according to job specifications.</p> |
| | <p>1.4</p> | <p>Clean and sterilise nursery containers before sowing seeds following job specifications and organisational procedures.</p> |
| | <p>1.5</p> | <p>Apply nutrient solutions in the recommended quantities to trays and pots and sow seeds following job and manufacturer’s specifications.</p> |
| | <p>1.6</p> | <p>Maintain seedlings in nursery containers for the recommended duration, protecting them from pests and disease and ensure effective nutrient management according to hydroponic standards for seedlings.</p> |
| | <p>1.7</p> | <p>Harvest seedlings at the appropriate stage of growth to be transplanted in the appropriate hydroponic system according to hydroponic standards for seedlings.</p> |
| <p>2. Select plants and site for hydroponic farming</p> | <p>2.1</p> | <p>Choose the appropriate plants suitable for hydroponics farming based on their hydrophilic nature, seasonal temperature, priority, market demand and job requirements.</p> |

- 2.2 Choose a location with the required temperature and sunlight exposure suitable to the selected plant variety.
 - 2.3 Check the availability of various inputs such as water, electricity and fertilisers for hydroponic farming according to job requirements and organisational procedures.
 - 2.4 Prepare the layout of the plants following the recommended process and organisational procedures.
3. Maintain hydroponic plants
 - 3.1 Retain plants using the appropriate tools and implements, when required following organisational procedures.
 - 3.2 Check and ensure that the roots of plants get an appropriate quantity of nutrient solution for healthy growth.
 - 3.3 Detect pests and diseases and take appropriate remedial measures following guidance from relevant persons.
 - 3.4 Perform manual or auto-misting of plants with water to prevent the harmful effects of temperature following organisational procedures.
 - 3.5 Use nets for aeration and to prevent birds and animals from preying on the plants following organisational procedures.
 - 3.6 Retain the recommended nutrient solution temperature and take appropriate measures to control temperatures following manufacturer's specifications.
 - 3.7 Use oxygen meters with mobile application support and alarm to monitor the level of dissolved oxygen in the nutrient solution to maintain or adjust it.
 - 3.8 Maintain the recommended air space between the nutrient solution and the roots of plants according to hydroponic standards for plants.

- 3.9 Confirm that the required macronutrients and micronutrients are available to plants and crops according to different stages of growth.
- 3.10 Prune plants using the appropriate tools and implements. when required.
- 4. Manage irrigation and fertigation of plants
 - 4.1 Conduct irrigation of plants manually or using the drip irrigation system following the job specifications irrigation schedule and procedures.
 - 4.2 Establish the amount of fertiliser to be used for fertigation based on the selected crop, its stage of growth and the type of selected hydroponics technique.
 - 4.3 Select the relevant fertigation technique for use as appropriate following job requirements.
 - 4.4 Mix appropriate fertilisers with daily water requirements and apply manually or by using a fertigation system according to the selected fertigation technique.
 - 4.5 Maintain records of irrigation and fertigation of crops according to organisational procedures.
- 5. Conduct harvesting activities
 - 5.1 Monitor the maturity of plants for harvesting following job requirements and organisational procedures.
 - 5.2 Harvest plants using the relevant tools, ensuring minimum damage following organisational procedures.
 - 5.3 Discard damaged or disfigured plants following industry standards and organisational procedures.
 - 5.4 Conduct sorting and grading of the plants on the basis of applicable parameters.
 - 5.5 Tag harvested plants for identification according to job requirements and organisational procedures.

- 5.6 Maintain records of the harvesting schedule and the period of cultivation of plants following organisational procedures.

RANGE STATEMENT

All range statements must be assessed:

1. **Growing medium** may include but is not limited to:
 - Rock wool
 - Peat moss
 - Coco coir
 - Inert foam
 - Perlite
 - Polystyrene
 - Styrofoam
 - Gravel
2. **Characteristics** may include but are not limited to:
 - Moderate fertility
 - Water holding capacity
 - Good aeration capacity
 - Germination rate
3. **Nursery containers** may include but are not limited to:
 - Clay pots
 - Plastic pots
 - Trays
 - Humidity domes
4. **Nutrients** may include but are not limited to:
 - Macronutrients
 - Micronutrients
 - Organic
 - Synthetic
5. **Tools and implements** may include but are not limited to:
 - Duster
 - Sprayer
 - Mister
 - Fogger
 - Injector
 - Pruner
 - Trimmer
6. **Pests and diseases** may include but are not limited to:
 - Bacteria
 - Fungi
 - Insects/mites
 - Molluscs
 - Viruses
 - Weeds
 - Protozoans
 - Vertebrates
 - Parasitic plants
7. **Fertigation** may include but is not limited to:
 - Quantitative fertigation
 - Proportional application fertigation
8. **Parameters** may include but are not limited to:
 - Size
 - Appearance
 - Colour
 - Quality
 - Ripeness
 - Texture

9. Records may include but are not limited to:

- Notes
- Photographs
- Video clips

UNDERPINNING KNOWLEDGE AND SKILLS

Candidates must know and understand:

1. What are the industry and organisational procedures for setting up and maintaining hydroponic plants.
2. What is growing medium.
3. Why it is important to select the appropriate growing medium for seed germination, ensuring the medium has the required characteristics and how to do so.
4. Why it is important to sterilise the growing medium before use according to manufacturer's instructions and how to do so.
5. Which nursery containers to select for the growth of plants.
6. Why it is important to clean and sterilise the nursery containers before sowing seeds.
7. What are the different types of nutrients.
8. What is nutrient solution.
9. How to apply the nutrient solution in the recommended quantity to the trays and pots and sow the seeds.
10. How to maintain seedlings in nursery containers for the recommended duration, protecting them from pests and disease and ensure effective nutrient management.
11. How to harvest seedlings at the appropriate stage of growth to be transplanted in the appropriate hydroponic system.
12. What are hydrophilic and hydrophobic plants.
13. Why it is important to consider seasonal temperature for hydroponic farming.
14. How to select the appropriate plants suitable for hydroponics farming based on hydrophilic nature of plant, seasonal temperature, priority, market demand and organisational requirements.
15. How to select a location with the required temperature and sunlight exposure suitable to the selected plant variety.
16. Why it is important to check the availability of various inputs such as water, electricity and fertilisers for hydroponic farming according to job requirements and organisational procedures and how to do so.
17. How to prepare the layout of the plants following the recommended process, job specifications and organisational procedures.
18. How to maintain plants using the appropriate tools and implements, when required following organisational procedures.
19. Why it is important to check and ensure that the roots of plants get an appropriate quantity of nutrient solution for healthy growth and how to do so.
20. What are the different types of plant pests and diseases.
21. How to detect pests and diseases and take appropriate remedial measures following guidance from appropriate persons.

22. How to conduct manual or auto-misting of the plants with water to prevent the harmful effects of temperature.
23. How to use nets for aeration and to prevent birds and animals from preying on the plants.
24. Why it is important to maintain the recommended nutrient solution temperature and take appropriate measures to control the temperature and how to do so.
25. How to use the oxygen meter with mobile application support and alarm to monitor the level of dissolved oxygen in the nutrient solution and maintain or adjust it.
26. Why it is important to maintain the recommended air space between the nutrient solution and the roots of plants how to do so.
27. How to confirm that the required macronutrients and micronutrients are available to plants and crops according to different stages of their growth.
28. How to carry out pruning of plants using the appropriate tools and implements, when required.
29. What is irrigation of plants.
30. How to conduct irrigation of plants either manually or using the drip irrigation system following the organisation's irrigation schedule and procedures.
31. What is fertigation.
32. How to determine the amount of fertiliser to be used for fertigation based on the selected plant or crop, its stages of growth and the type of selected hydroponics technique.
33. How to select the relevant fertigation technique for use, as appropriate.
34. How to mix appropriate fertilisers with the daily water requirements and apply manually or by using a fertigation system according to the selected fertigation technique.
35. Why it is important to maintain the record of irrigation and fertigation of crop and how to do so.
36. How to monitor the maturity of plants and crops for harvesting.
37. How to harvest using the relevant tools, ensuring minimum damage to plants.
38. Why it is important to discard any damaged or disfigured plants and how to do so.
39. How to conduct sorting and grading of the plants on the basis of applicable parameters.
40. Why it is important to tag the harvested plants for identification and how to do so.
41. Why it is important to maintain the record of the harvesting schedule and the period of cultivation of plants and how to do so.

EVIDENCE GUIDE

For assessment purposes:

(1) Critical Aspects of Evidence

Candidates must prove that they can carry out **all** of the elements, meeting **all** the performance criteria, range and underpinning knowledge **on more than one occasion**. This evidence must come from a real work environment.

(2) Methods of Assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic.

Evidence may be collected in a variety of ways including:

- Observation
- Written/oral questioning
- Written evidence (journals, logbooks)
- Case studies
- Witness testimony
- Professional discussion
- Products of work (records, reports)

Questioning techniques should not require language, literacy or numeracy skills beyond those required in this unit of competency.

(3) Context of Assessment

This unit may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by a candidate working alone or as part of a team. The assessment environment should not disadvantage the candidate.

The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Simulation **may be used**, where natural work evidence is unlikely to occur.

UA62102

Protect plants grown under hydroponics

Unit Descriptor:

This unit deals with the knowledge, skills and attitudes required to protect plants and crops grown under hydroponics. It includes the identification of various problems and the application of corrective actions to protect the plants and crops.

ELEMENT **PERFORMANCE CRITERIA**

Candidates must be able to:

- | | |
|-------------------------------|---|
| 1. Identify nutrient problems | <ul style="list-style-type: none"> 1.1 Access plant nutrition health advisory guide or industry standards for the plant or crop to identify problems and corrective actions. 1.2 Observe and document conditions of growing plants and crop following plant maintenance procedures. 1.3 Compare observed symptoms with established industry standards following organisational procedures. 1.4 Analyse and confirm data against established industry standards of plant health. 1.5 Specify the nutrient symptom observed according to job specifications. 1.6 Record activities relating to identifying nutrient problems following organisational procedures. |
| 2. Correct nutrient problems | <ul style="list-style-type: none"> 2.1 Identify nutrients associated with problem following organisational procedures. 2.2 Check nutrient solution for deviations in parameters and document data according to manufacturer’s requirements. 2.3 Check previous records of nutrient solutions prepared and applied according to organisational procedures. 2.4 Adjust nutrient solutions as deemed necessary according to manufacturer’s requirements. |

- 2.5 Record activities relating to correcting nutrient problems according to organisational procedures.
3. Identify pest problems
 - 3.1 Access pest advisory guide or standards for the plant or crop according to industry standards and organisational procedures.
 - 3.2 Observe and document the presence of pests in growing plant or crop according to industry standards and organisational procedures.
 - 3.3 Compare the observed signs of pest activities with established industry standards.
 - 3.4 Analyse and confirm data against established industry standards of pest infestation.
 - 3.5 Specify pests associated with signs observed according to advisory guide on pests.
 - 3.6 Record activities relating to identifying pest problems following organisational procedures.
4. Resolve pest problems
 - 4.1 Select and wear appropriate personal protective equipment according to occupational safety and health regulations, industry requirements and organisational procedures.
 - 4.2 Identify pest problems according to advisory guide on pests and organisational procedures.
 - 4.3 Check for stages of development and susceptible stages of pest and document data according to advisory guide on pests and organisational procedures.
 - 4.4 Check previous records of infestation or control measures applied following organisational procedures.

- 4.5 Manage pests as necessary following organisational procedures.
- 4.6 Record activities relating to correcting pest problems following organisational procedures.
- 5. Identify water-related issues
 - 5.1 Access water quality guide or industry standards for hydroponic systems water-related issues and solutions.
 - 5.2 Observe and document water quality parameters following organisational procedures.
 - 5.3 Measure and document water quality parameters following organisational procedures.
 - 5.4 Analyse data of water quality for hydroponics against established industry standards.
 - 5.5 Specify deviations associated with water quality readings following organisational procedures.
 - 5.6 Record activities relating to identifying water-related issues following organisational procedures.
- 6. Treat water-related issues
 - 6.1 Identify water quality problems following organisational procedures.
 - 6.2 Check water quality for deviations in parameters and document data following organisational procedures.
 - 6.3 Check previous records of water quality issues.
 - 6.4 Treat water as necessary following organisational procedures.
 - 6.5 Record activities relating to treating water-related issues following organisational procedures.

RANGE STATEMENT

All range statements must be assessed:

1. **Nutrients** may include but are not limited to:
 - Macronutrients
 - Micronutrients
 - Organic
 - Synthetic
2. **Nutrient symptoms** may include but are not limited to:
 - Chlorosis (venial or intervenal)
 - Discolouration
 - Stunted growth
 - Necrosis
 - Distortion
 - Resetting
 - Spindled growth
 - Rots
 - Enlargement
3. **Pests** may include but are not limited to:
 - Bacteria
 - Fungi
 - Insects/mites
 - Molluscs
 - Viruses
 - Weeds
 - Protozoans
 - Vertebrates
 - Parasitic plants
4. **Pest problems** may include but are not limited to:
 - Insect or other arthropod infestation
 - Bacterial infections
 - Fungal infections
 - Viral infections
 - Molluscs (slugs, snails)
 - Parasitic plants
 - Weeds
5. **Water quality parameters** may include but are not limited to:
 - Total dissolved solids (TDS)
 - Suspended solids
 - Hardness
 - pH
 - Turbidity
 - Oxygen concentration
 - Microbe levels
 - Chemical oxygen demand (COD)
6. **Personal protective equipment** may include but is not limited to:
 - Overall or coverall
 - Dust or face mask
 - Respirator
 - Goggles
 - Gloves
 - Specialised boots
7. **Records** may include but are not limited to:
 - Notes
 - Photographs
 - Video clips

UNDERPINNING KNOWLEDGE AND SKILLS

Candidates must know and understand:

1. What are the industry standards and organisational procedures for protecting hydroponic plants.
2. Why it is important to access plant nutrition health advisory guide or industry standards for the plant or crop and how to do so.
3. Why it is important to observe and document conditions in growing plants and crops how to do so.
4. Why it is important to compare observed symptoms with established industry standards and how to do so.
5. Why it is important to analyse and confirm data against established industry standards of plant health and how to do so.
6. What are plant nutrients and when to use them.
7. How to specify the nutrient symptom observed.
8. Why it is important to record activities relating to identifying and correcting nutrient problem and how to do so.
9. How to identify nutrient associated with the problem.
10. How to check nutrient solution for deviations in parameters and document.
11. Why it is important to check previous records of nutrient solution prepared and applied and how to do so.
12. How to adjust nutrient solution as necessary.
13. Why it is important to access pest advisory guide or standards for the plant or crops and how to do so.
14. How to observe and document the presence of pests in growing plant or crops.
15. What are signs of pest activity.
16. How to compare the observed signs of pest activities with established industry standards.
17. How to analyse and confirm data against established industry standards of pest infestation.
18. How to specify pests associated with signs observed.
19. Why it is important to record activities relating to identifying and correcting pest problem according to advisory guide or standards and how to do so.
20. What is personal protective equipment.
21. Why it is important to select and wear appropriate personal protective equipment.
22. Why it is important to check for the stage of development and the susceptible stage of a pest and document data according to advisory guide or industry standards.

23. Why it is important to check previous records of infestation or control measures applied.
24. How to manage pests as necessary.
25. Why it is important to access water quality guide or industry standards for hydroponic systems.
26. What are water quality parameters.
27. Why it is important to observe and document water quality parameters and how to do so.
28. How to measure and document water quality.
29. How to analyse data of water quality for hydroponics against established industry standards.
30. How to specify deviations associated with water quality.
31. Why it is important to record activities relating to identifying and treating water-related issues and how to do so.
32. How to identify water quality problems.
33. How to check water quality for deviations in parameters and document data.
34. Why it is important to check previous records of water quality issues and how to do so.
35. How to treat water as necessary.

EVIDENCE GUIDE

For assessment purposes:

(1) Critical Aspects of Evidence

Candidates must prove that they can carry out **all** of the elements, meeting **all** the performance criteria, range and underpinning knowledge **on more than one occasion**. This evidence must come from a real work environment.

(2) Methods of Assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic.

Evidence may be collected in a variety of ways including:

- Observation
- Written/oral questioning
- Written evidence (journals, logbooks, etc.)
- Case studies
- Witness testimony
- Professional discussion
- Products of work (records, reports)

Questioning techniques should not require language, literacy or numeracy skills beyond those required in this unit of competency.

(3) Context of Assessment

This unit may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by a candidate working alone or as part of a team. The assessment environment should not disadvantage the candidate.

The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Simulation **may be used**, where natural work evidence is unlikely to occur.

UA62202**Identify and correct hazards in the hydroponic environment**

Unit Descriptor:

This unit deals with the knowledge, skills and attitudes required to conduct work activities in an environmentally conscious manner to protect the hydroponic environment. Candidates should take steps to minimise any negative impact on the environment by completing tasks and activities in a way which causes as little damage or disturbance to the environment.

ELEMENT**PERFORMANCE CRITERIA***Candidates must be able to:*

- | | |
|---|---|
| 1. Work in an environmentally conscious way | <ul style="list-style-type: none"> 1.1 Perform duties in accordance with relevant policies, regulations, standards and legislation. 1.2 Execute duties in a manner that minimises environmental damage. 1.3 Operate and handle equipment and materials in a manner that minimises environmental damage. |
| 2. Discern hydroponic environmental hazards | <ul style="list-style-type: none"> 2.1 Identify activities that impact the environment according to industry standards and organisational procedures. 2.2 Observe and document environmental impact according to industry standards and organisational procedures. 2.3 Assess the impact of activities on the environment according to industry standards and organisational procedures. 2.4 Record activities relating to identifying environmental hazards. |
| 3. Correct hydroponic environmental hazards | <ul style="list-style-type: none"> 3.1 Document observed hazards according to organisational procedures. 3.2 Identify and report unusual occurrences to relevant persons according to organisational procedures. |

- 3.3 Implement recommended corrective actions according to organisational procedures.
- 3.4 Dispose of hazardous and non-hazardous waste in a safe manner according to approved legislative procedures and practices.
- 3.5 Contribute to sustainable development, particularly in the conservation of energy, water, use of resources and equipment to minimise environmental damage.
- 3.6 Record activities relating to correcting environmental hazards according to organisational procedures.

RANGE STATEMENT

All range statements must be assessed:

- 1. Relevant policies and legislation** may include but are not limited to:
 - Organisational policies
 - Health and safety at work
 - Environmental legislation
 - Solid waste management policies
 - Recyclable policies
- 2. Minimises environmental damage** may include but is not limited to:
 - Disposing of polluting substances safely
 - Reducing the volume of waste
 - Using biodegradable and eco-friendly chemicals
 - Planning tasks to reduce the use of fuel and electricity
- 3. Equipment and materials** may include but are not limited to:
 - Access equipment
 - Hand and power tools
 - Personal protective equipment
 - Cleaning chemicals
 - Soaps and sanitisers
 - Garbage disposal bags
 - Cloths and towels
 - Containers
- 4. Activities that impact the environment** may include but are not limited to:
 - Burning of waste
 - Emissions
 - Carbon dioxide enrichment
 - Drainage management and run-off
 - Siting of hydroponic systems
- 5. Hazards** may include but are not limited to:
 - Water quality contamination (pathogens from animal waste, leaching of nutrients from fertilisers, contamination from pesticides)
 - Fire
 - Electrical outage or surge
 - Improper disposal of waste
 - Improper storage of materials
 - Weather conditions (excessive wind, lack of shade)
 - Emission of greenhouse gases
- 6. Relevant policies and legislation** may include but are not limited to:
 - Raw or exposed electrical wires
 - Sharp objects
 - Steep inclines or depressions
 - Poned areas

7. **Hazardous waste** may include but is not limited to:

- Oils
- Chemicals and solutions
- Harmful materials (asbestos, fibreglass)
- Electronic equipment
- Organic hazards (pest excrement, pest carcasses)

9. **Records** may include but are not limited to:

- Notes
- Pictures
- Video clips

8. **Non-hazardous waste** may include but is not limited to:

- Food
- Plant matter
- Paper

UNDERPINNING KNOWLEDGE AND SKILLS

Candidates must know and understand:

1. What are the relevant policies, regulations, standards and legislation relating to hydroponics and the environment.
2. Why it is important to perform duties in accordance with relevant policies, regulations and legislation.
3. What is environmental damage.
4. Why it is important to execute duties in a manner which minimises environmental damage.
5. How to operate and handle equipment and materials in a manner that minimises environmental damage.
6. What are activities that can impact the environment.
7. Why it is important to identify activities that impact the environment and how to do so.
8. Why it is important to observe and document environmental impact and how to do so.
9. How to assess the impact of activities on the environment.
10. Why it is important to record activities relating to identifying environmental hazards and how to do so.
11. Why it is important to document observed hazards and how to do so.
12. What are unusual occurrences.
13. Why it is important to identify and report unusual occurrences to relevant persons and how to do so.
14. What are corrective actions.
15. How to implement recommended corrective actions.
16. What is hazardous and non-hazardous waste.
17. Why it is important to dispose of hazardous and non-hazardous waste safely.
18. What is sustainable development and conservation.
19. Why it is important to contribute to sustainable development, particularly in the conservation of energy, water, use of resources and equipment to minimise environmental damage and how to do so.
20. Why it is important to record activities relating to correcting environmental hazards and how to do so.

EVIDENCE GUIDE

For assessment purposes:

(1) Critical Aspects of Evidence

Candidates must prove that they can carry out **all** of the elements, meeting **all** the performance criteria, range and underpinning knowledge **on more than one occasion**. This evidence must come from a real work environment.

(2) Methods of Assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic.

Evidence may be collected in a variety of ways including:

- Observation
- Written/oral questioning
- Written evidence (journals, logbooks)
- Case studies
- Witness testimony
- Professional discussion
- Products of work (records, reports)

Questioning techniques should not require language, literacy or numeracy skills beyond those required in this unit of competency.

(3) Context of Assessment

This unit may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by a candidate working alone or as part of a team. The assessment environment should not disadvantage the candidate.

The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Simulation **may be used**, where natural work evidence is unlikely to occur.

UA41703**Manage safety and health in own area of responsibility**

Unit Descriptor:

This unit describes the knowledge, skills and attitudes required to manage safety and health requirements in own area of responsibility. It details the outcomes required to evaluate responsibilities and liabilities, assess risks and communicate and monitor safety and health policies to comply with regulatory and organisational requirements for safety and health.

ELEMENT**PERFORMANCE CRITERIA**

Candidates must be able to:

- | | |
|---|--|
| 1. Evaluate responsibilities and liabilities in relation to safety and health legislation and regulations | 1.1 Assess personal responsibilities and liabilities under legislative and organisational safety and health policies and procedures. |
| | 1.2 Identify and confirm, with key stakeholders, organisational responsibilities under health and safety legislation. |
| | 1.3 Identify and consult with relevant health and safety specialists when identified issues cannot be dealt with within own remit. |
| 2. Assess and minimise safety and health risks in own area of responsibility | 2.1 Confirm that the work environment and practices in own area of responsibility comply with organisational safety and health policy statements and are reviewed at regular intervals. |
| | 2.2 Consult with persons in own area of responsibility or their representatives on safety and health issues in accordance with organisational and legislative safety and health policies and procedures. |
| | 2.3 Confirm that a system is in place within the organisation for identifying health and safety hazards and assessing risks in own area of responsibility. |

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|----|---|---|--|
| | 2.4 | Take action to eliminate and manage identified hazards and risks within the limits of own responsibility in accordance with organisational safety and health policies and procedures. | |
| | 2.5 | Refer identified hazards and risks outside own scope of authority to appropriate persons in accordance with organisational safety and health policies and procedures. | |
| | 2.6 | Confirm that sufficient resources are allocated across own area of responsibility to deal with safety, health and hygiene issues. | |
| 3. | Review health and safety policies in own area of responsibility | 3.1 | Confirm that the safety and health of persons and the security of resources and information are prime considerations when designing or reviewing the work environment and practices. |
| | | 3.2 | Evaluate written safety and health policies against requirements for own area of responsibility. |
| 4. | Monitor safety and health in own area of responsibility | 4.1 | Evaluate the effectiveness of systems used to identify and assess health and safety hazards and risks within own area of responsibility in accordance with organisational safety and health policies and procedures. |
| | | 4.2 | Communicate and discuss written organisational safety and health policies and procedures with persons in own area of responsibility and other relevant parties and confirm understanding. |
| | | 4.3 | Assess the work environment within own area of responsibility against organisational safety and health policies and procedures. |
| | | 4.4 | Identify and report non-compliance with organisational safety and health policies and practices within own area of responsibility to key stakeholders. |

- 4.5 Identify and evaluate the safety and health requirements in project or operational plans within own area of responsibility to ensure compliance with legislative and organisational safety and health policy and procedures.

RANGE STATEMENT

All range statements must be assessed:

1. **Safety and health policies and procedures** may include but are not limited to:
 - Safe work techniques
 - Safe work environment
 - Emergency, fire and accident
 - Security of documents, cash, equipment, people
 - Hygiene practices
2. **Risks** may include but are not limited to:
 - Use and maintenance of equipment and materials
 - Poor working practices
 - Unsafe behaviour
 - Ill health issues
 - Condition of workplace
3. **Key stakeholders** may include but are not limited to:
 - Senior management
 - Person responsible for organisational health and safety policy and implementation
 - Staff
 - Customers

UNDERPINNING KNOWLEDGE AND SKILLS

Candidates must know and understand:

1. Why it is important to evaluate personal responsibilities and liabilities under safety and health legislation and the organisational safety and health policies and procedures and how to do so.
2. What are the organisation's responsibilities under health and safety legislation.
3. What are the types of health and safety specialists within the organisation and industry.
4. Why it is important to identify and consult with a health and safety specialist when identified issues are outside own remit and what are the organisational procedures for doing so.
5. How to confirm with key stakeholders that the work environment and practices in own area of responsibility comply with organisational safety and health policy statements and are reviewed at regular intervals.
6. Why it is important to consult regularly with persons in own area of responsibility or their representatives on safety and health issues and what are the requirements for doing so.
7. What systems are in place within the organisation for identifying hazards and assessing risks and how to use them.
8. What action can be taken within the limits of own responsibility to eliminate and manage identified hazards and risks and what are the organisational safety and health policies and procedures for doing so.
9. What are the types of hazards and risks that may arise in the workplace in relation to safety and health.
10. How to refer identified hazards and risks outside own scope of authority to the appropriate person and what are the organisational safety and health policies and procedures for doing so.
11. Why it is important to make the safety and health of persons and the security of resources and information prime considerations when designing or reviewing working environments and practices and how to do so.
12. What are the resources required to deal with safety, health and hygiene issues.
13. How to allocate sufficient resources across own area of responsibility to deal with safety, health and hygiene issues.
14. How to review written safety and health policies against the requirements for own area of responsibility.
15. How to communicate recommendations for changes to safety and health policies to individuals within own area of responsibility and what are the organisational requirements for doing so.
16. Why it is important to share and discuss written safety and health policies to persons in own area of responsibility and other relevant parties and confirm understanding.
17. How to evaluate systems for identifying and assessing health and safety hazards and risks within own area of responsibility.

18. How to assess the work environment within own area of responsibility against organisational safety and health policies and procedures.
19. How to identify and report non-compliance with organisational safety and health policies and practices within own area of responsibility to key stakeholders.
20. How to identify and evaluate the safety and health requirements in project or operational plans within own area of responsibility to ensure compliance to legislative and organisational safety and health policies and procedures.

EVIDENCE GUIDE

For assessment purposes:

(1) Critical Aspects of Evidence

Candidates must prove that they can carry out **all** of the elements, meeting **all** the performance criteria, range and underpinning knowledge **on more than one occasion**. This evidence must come from a real work environment.

(2) Methods of Assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic.

Evidence may be collected in a variety of ways including:

- Observation
- Written/oral questioning
- Case study
- Personal statement
- Witness testimony
- Professional discussion
- Products of work

Questioning techniques should not require language, literacy or numeracy skills beyond those required in this unit of competency.

(3) Context of Assessment

This unit may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by a candidate working alone or as part of a team. The assessment environment should not disadvantage the candidate.

The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Simulation **should not be used**, except in exceptional circumstances where natural work evidence is unlikely to occur.

U56702

Develop and sustain productive working relationships

Unit Descriptor:

This unit describes the knowledge, skills and attitudes required to develop and sustain productive and positive working relationships with colleagues within the organisation.

ELEMENT**PERFORMANCE CRITERIA**

Candidates must be able to:

- | | |
|--|---|
| 1. Create productive working relationships | <ul style="list-style-type: none"> 1.1 Establish productive and positive relationships with colleagues within the organisation. 1.2 Identify and respect roles, responsibilities, interests and concerns of colleagues in accordance with organisational procedures. 1.3 Build trust and mutual respect, particularly where you have no authority/shared authority over those with whom you are working. 1.4 Deal with difficult situations and challenges in a sensitive manner in accordance with organisational procedures. |
| 2. Maintain productive working relationships | <ul style="list-style-type: none"> 2.1 Provide individuals with sufficient information to enable them to perform in an effective manner. 2.2 Consult individuals in relation to key decisions and activities and take their views into account in accordance with organisational procedures. 2.3 Fulfil agreements made and inform all colleagues in accordance with established procedures. 2.4 Advise individuals in a prompt manner of any challenges encountered in accordance with organisational policies and procedures. |

- 2.5 Identify and resolve conflicts of interest, values and disagreements in ways that minimise damage to performance and to the individuals involved.
- 2.6 Monitor and review working relationships to identify areas for improvement.
- 2.7 Seek and provide feedback to improve the performance of those involved.

RANGE STATEMENT

All range statements must be assessed:

1. Conflicts of interest:

- Undermining of persons' self-interest and values
- Undermining professional interest and values
- Undermining of organisational interests and values

2. Feedback:

- Oral
- Written

UNDERPINNING KNOWLEDGE AND SKILLS

Candidates must know and understand:

1. What are the benefits of developing productive and positive working relationships.
2. What are the principles of effective communication and how to develop productive relationships.
3. Why it is important to create trust and mutual respect.
4. Why it is important to understand how to deal with difficult situations and issues.
5. How to identify and meet the needs of other persons.
6. What information is appropriate to provide to colleagues and the factors that need to be taken into consideration.
7. How to consult with colleagues in relation to key decisions and activities.
8. Why it is important to take account of, and be seen to take account of, the views of colleagues.
9. Why communication with colleagues on fulfilment of agreements or any problems affecting or preventing fulfilment is important.
10. How to identify conflicts of interest and values with colleagues and the techniques that can be used to manage or remove them.
11. How to identify disagreements with colleagues and the techniques for resolving them.
12. What type of damage conflicts of interest and values and disagreements with colleagues can cause to individuals and organisations.
13. How to monitor and review working relationships.
14. How to obtain and make use of feedback from colleagues to improve own performance.
15. How to provide colleagues with feedback designed to improve their performance.
16. What are the mechanisms for consulting with colleagues on key decisions and activities.
17. What are your organisation's planning and decision-making processes.

EVIDENCE GUIDE

For assessment purposes:

(1) Critical Aspects of Evidence

Candidates must prove that they can carry out **all** of the elements, meeting **all** the performance criteria, range and underpinning knowledge **on more than one occasion**. This evidence must come from a real work environment.

(2) Methods of Assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic.

Evidence may be collected in a variety of ways including:

- Observation
- Written/oral questioning
- Written evidence
- Witness testimony
- Professional discussion

Questioning techniques should not require language, literacy or numeracy skills beyond those required in this unit of competency.

(3) Context of Assessment

This unit may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, that is, the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by a candidate working alone or as part of a team. The assessment environment should not disadvantage the candidate.

The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Simulation **should not be used**, except in exceptional circumstances where natural work evidence is unlikely to occur.

UA11302

Plan and organise work

Unit Descriptor:

This unit deals with the knowledge, skills and attitudes required to effectively plan and organise work assignments and it applies to all individuals.

ELEMENT**PERFORMANCE CRITERIA**

Candidates must be able to:

- | | |
|--|--|
| 1. Identify work requirements | 1.1 Follow and adhere to instructions for work schedule, performance and quality assurance requirements and clarify where necessary. |
| | 1.2 Obtain and confirm understanding of the relevant specifications for activity outcomes and clarify where necessary. |
| 2. Prepare the process to complete work | 2.1 Identify tasks according to objectives, performance requirements and specifications. |
| | 2.2 Identify, prioritise and sequence tasks to achieve the effective completion of work according to organisational policy. |
| 3. Select tools and equipment | 3.1 Identify and wear personal protective equipment to suit job requirements. |
| | 3.2 Identify and select appropriate tools and equipment for the required task. |
| 4. Demonstrate safe and efficient sequence of work | 4.1 Provide services in a safe, logical and efficient sequence according to organisational procedures. |
| | 4.2 Store tools, supplies and equipment when not in immediate use according to organisational policy. |
| 5. Report outcomes | 5.1 Report to appropriate persons on the completion of activities according to organisational procedures. |
| | 5.2 Enter relevant customer details on database according to organisational procedures. |

- 6. Clean up
 - 6.1 Store unused materials in an appropriate area according to organisational safety procedures.
 - 6.2 Remove empty containers and waste materials from the service area according to organisational policies and procedures.
 - 6.3 Confirm that the service area is left clean, safe and secure on completion of work according to organisational health and safety requirements.
 - 6.4 Clean, maintain and store tools and equipment according to manufacturer's recommendations and organisational procedures.

RANGE STATEMENT

All range statements must be assessed:

1. Personal protective equipment:

- Gloves
- Face
- Body
- Head

2. Appropriate persons

- Supervisor
- Customer
- Colleague

UNDERPINNING KNOWLEDGE AND SKILLS

Candidates must know and understand:

1. What are the organisational policies and procedures with regard to planning and organising allocated duties.
2. How to follow and adhere to instructions for work schedules, performance and quality assurance requirements and when to clarify.
3. Why it is important to obtain and confirm understanding of the relevant specifications for activity outcomes and how and when to clarify.
4. How to identify tasks according to objectives, performance requirements and specifications.
5. How to identify, prioritise and sequence tasks to achieve the effective completion of work according to organisational policy.
6. How to identify and correctly wear personal protective equipment to suit job requirements.
7. What are the organisational and equipment safety requirements.
8. How to identify and select appropriate tools and equipment for the required service/task.
9. What are the materials and equipment appropriate to the task.
10. Why it is important to follow and adhere to instructions for work schedule, performance and quality assurance requirements.
11. How to follow routine instructions and perform tasks according to organisational procedures.
12. How to provide services safely in a logical and efficient sequence according to organisational procedures.
13. How to store tools, supplies and equipment safely when not in immediate use according to organisational policy.
14. How to report to appropriate persons on the completion of activities according to organisational procedures.
15. How to enter relevant client details on database according to organisational procedures.
16. How to store unused materials safely in an appropriate area according to organisational safety procedures.
17. How to remove empty containers and waste materials from the service area according to organisational policies and procedures.
18. Why it is important to leave the service area clean, safe and secure on completion of work according to organisational health and safety requirements.
19. Why it is important to clean, maintain and store tools and equipment according to manufacturer's recommendations and organisational procedures and how to do so.

EVIDENCE GUIDE

For assessment purposes:

(1) Critical Aspects of Evidence

Candidates must prove that they can carry out **all** of the elements, meeting **all** of the performance criteria, range and underpinning knowledge **on more than one occasion**. This evidence must come from a real working environment.

(2) Methods of Assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic.

Evidence may be collected in a variety of ways including:

- Observation
- Written/oral questioning
- Written evidence
- Witness testimony
- Professional discussion

Questioning techniques should not require language, literacy or numeracy skills beyond those required in this unit of competency.

(3) Context of Assessment

This unit may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by a candidate working alone or as part of a team. The assessment environment should not disadvantage the candidate.

The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Simulation **should not be used**, except in exceptional circumstances where natural work evidence is unlikely to occur.

Assessment methods

The methods which can be used to determine competence in performance and underpinning knowledge.

Assessors

The Assessor guides and assesses the candidate. His/her role is to determine whether evidence presented by a candidate for assessment within the programme meets the required standard of competence in the relevant unit or element. The Assessor needs to be competent to assess to national standards in the area under assessment.

Approved Centre

Organisation/Centre approved by the TVET Council to offer full National Vocational Qualifications.

Case Studies

In situations where it is difficult for workplace assessment to take place, case studies can offer the candidate an opportunity to demonstrate potential competence.

A case study is a description of an actual or imaginary situation presented in some detail. The way the case study is presented will vary depending upon the qualification, but the most usual methods are written, taped or filmed.

The main advantage of a case study is the amount of evidence of underpinning knowledge they can generate and the specific nature of the evidence produced.

Competence

In the context of vocational qualifications, competence means: the ability to carry out prescribed activities to nationally pre-determined standards in an occupation. The definition embraces cognitive, practical and behavioural skills, underpinning knowledge and understanding and the ability to react appropriately in contingency situations.

Element

An element is a description of an activity which a person should be able to do. It is a description of an action, behaviour or outcome which a person should be able to demonstrate.

Explanation of NVQ Levels

NVQs cover five (5) levels of competence, from entry level staff at Level 1 through to senior management at Level 5.

Level 1 - Entry Level

Recognises competence in a range of varied work activities performed in a variety of contexts. Most work activities are simple and routine. Collaboration with others through work groups or teams may often be a requirement. Substantial supervision is required especially during the early months evolving into more autonomy with time.

Level 2 - Skilled Occupations

Recognises competence in a broad range of diverse work activities performed in a variety of contexts. Some of these may be complex and non-routine and involve some responsibility and autonomy. Collaboration with others through work groups or teams and guidance of others may be required.

Level 3 - Technician and Supervisory Occupations

Recognises competence in a broad range of complex, technical or professional work activities performed in a wide variety of contexts, with a substantial degree of personal responsibility and autonomy. Responsibility for the work of others and the allocation of resources are often a requirement. The individual is capable of self-directed application, exhibits problem solving, planning, designing and supervisory capabilities.

Level 4 - Technical Specialist and Middle Management Occupations

Recognises competence involving the application of a range of fundamental principles and complex techniques across a wide and unpredictable variety of contexts. Requires very substantial personal autonomy and often significant responsibility for the work of others, the allocation of resources, as well as personal accountability for analysis, diagnosis, design, planning, execution and evaluation.

Level 5 - Chartered, Professional and Senior Management Occupations

Recognises the ability to exercise personal professional responsibility for the design, development or improvement of a product, process, system or service. Recognises technical and management competencies at the highest level and includes those who have occupied positions of the highest responsibility and made outstanding contribution to the promotion and practice of their occupation.

External Verifier

The External Verifier is trained and appointed by the TVET Council and is competent to approve and ensure an approved Centre's quality of provision.

Internal Verifier

The Internal Verifier acts in a supporting role for Assessors to ensure consistent quality of assessment and competence. They need to be competent to assess to national standards in the area under assessment.

NVQ

National Vocational Qualifications (NVQs) are work-based qualifications that assess an individual's competence in a work situation and certify that the individual can perform the work role to the standards expected in employment.

NVQs are based on national occupational standards of competence drawn up by standards-setting bodies known as Industry Lead Bodies. The standards describe the level and breadth of performance that is expected of persons working in the industry or sector which the NVQ covers.

NVQ Coordinator

The NVQ Coordinator is the centre contact within each approved Centre offering NVQs. He/she has overall responsibility for the operation and administration of the NVQ system.

Observation

Observation of the candidate carrying out his/her job in the workplace is the assessment method recommended in the vast majority of units and elements. Observation of staff carrying out their duties is something that most supervisors and managers do every day.

Performance Criteria

Performance criteria indicate what is required for the successful achievement of an element. They are descriptions of what you would expect to see in competent performance.

Product of Work

This could be items produced during the normal course of work, which can be used for evidence purposes such as reports, menus, promotional literature, training plans, etc.

Questioning

Questioning is one of the most appropriate ways to collect evidence to assess a candidate's underpinning knowledge and understanding.

Questioning can also be used to assess a candidate in those areas of work listed in the range which cannot be assessed by observation. Guidance on when this assessment method can be used is given in the assessment guidance of each individual element.

As an assessment method, questioning ensures you have all of the evidence about a candidate's performance. It also allows you to clarify situations.

Range statements

The range puts the element of competence into context. A range statement is a description of the range of situations to which an element and its performance criteria is intended to apply.

Range statements are prescriptive; therefore each category must be assessed.

Role-plays

Role-plays are simulations where the candidate is asked to act out a situation in the way he/she considers “real” people would behave. By using role-play situations to assess a candidate you are able to collect evidence and make a judgment about how the candidate is most likely to perform. This may be necessary if the range specified includes a situation in which the candidate is unlikely to find himself/herself in the normal course of their work, or where the candidate needs to develop competence, before being judged competently, for example, in a disciplinary situation,

Simulations

Where possible, assessment should always be carried out by observing **natural performance** in the workplace. **Simulated performance**, however, can be used where specified to collect evidence about an aspect of the candidate’s work which occurs infrequently or is potentially hazardous, for example, dealing with fires.

By designing the simulated situation, briefing the candidate and observing his/her performance, you will be able to elicit evidence which will help you judge how a candidate is **most likely** to perform in real life.

Supplementary evidence

Supplementary evidence can be used to confirm and support performance evidence. Types of supplementary evidence include witness testimonies, reports, journals or diaries, records of activities, personal statements, simulation (see note in glossary).

Underpinning knowledge

Underpinning knowledge indicates what knowledge is essential for a person to possess in order to successfully achieve an element and prove total competence.

Units

A unit of competence describes one or more activities which form a significant part of an individual’s work. Units are accredited separately but in combination can make up a vocational qualification. There are two categories of units:

Mandatory units - are core to a qualification and must be completed.

Optional units - candidates must choose the required number of individual units, specified in the qualification structure, to achieve the qualification.

Work-based projects

Work-based projects are a useful way for you to collect evidence to support any decision you make about a candidate's performance. They are particularly appropriate in determining the level of a candidate's underpinning knowledge and understanding where it may be insufficient to rely only on questioning observation.

A project often involves the identification of a solution to a specific problem identified by you and/or the candidate (such as looking at ways to redress a recent drop in sales), or may be a structured programme of work built around a central situation or idea (such as the introduction of a new job rostering process).