

**THE REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARDS**

**FOR**

**HORTICULTURAL PRODUCE PROCESSING UNIT MANAGER**

**LEVEL 6**



TVET CDACC

P.O. BOX 15745-00100

NAIROBI

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# FOREWORD

The provision of quality education and training is fundamental to the Government’s overall strategy for social economic development. Quality education and training will contribute to achievement of Kenya’s development blue print and sustainable development goals.

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. The education sector had to be aligned with the Constitution of Kenya 2010 and this resulted in the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No. 4 of 2016). A key fundamental feature of this policy is that, it is radically changing the design and delivery of the TVET training. The policy document requires that training in TVET shall be competency based, curriculum development shall be industry led, certification shall be based on demonstration of competence and mode of delivery shall allow for multiple entry and exit in TVET programmes.

These reforms demand that Industry takes a leading role in curriculum development to ensure curriculum addresses competence needs of the industry. It is against this background that these Occupational Standards were developed for the purpose of developing a competency-based curriculum for Horticultural Produce Processing Management level 6. These Occupational Standards will also be the basis for assessment of an individual for competence certification.

The development of these occupational standards was sponsored by GIZ CAADP ATVET project. TVET CDACC in conjunction with Micro Enterprises Support Programme Trust (MESPT) have reviewed this Occupational Standards and incorporated Food Safety. Danish International Development Agency (DANIDA) and the European Union (EU) sponsored the review process.

It is my conviction that the use of these Occupational Standards will play a great role towards the development of competent human resource for the Agriculture sector’s growth and sustainable development of the sector.

**PRINCIPAL SECRETARY, VOCATIONAL AND TECHNICAL TRAINING**

**MINISTRY OF EDUCATION**

# PREFACE

The Kenya Vision 2030 aims to transform Kenya into a newly industrializing, “middle-income country providing a high-quality life to all its citizens by the year 2030”. Kenya intends to create a globally competitive and adaptive human resource base to meet the requirements of a rapidly industrializing economy through life-long training and education. TVET has a major responsibility of facilitating the process of inculcating knowledge, attitudes and skills necessary for catapulting the country to a globally competitive country, hence the paradigm shift to embrace Competency Based Education and Training (CBET).

The Technical and Vocational Education and Training Act No. 29 of 2013 and and Sessional Paper No. 4 of 2016) on Reforming Education and Training Sectors in Kenya policy emphasized the need toreform curriculum development, assessment and certification in TVET. This called for shift to CBET to address the mismatch between skills acquired through training and skills needed by industry as well as increase the global competitiveness of Kenyan labour force.

The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC), in conjunction with Horticulture Sector Skills Advisory Committee (SSAC), German International Cooperation and Ministry of Agriculture, Livestock and Fisheries have developed these Occupational Standards for a Horticultural Processor. TVET CDACC in conjunction with Micro Enterprises Support Programme Trust (MESPT) have reviewed this Occupational Standards and incorporated Food Safety aspects. These Standards will also be the basis for assessment of an individual for competence certification.

The occupational standards are designed and organized with clear performance criteria for each element of a unit of competency. They also outline the required knowledge and skills as well as the evidence guide.

I am grateful to the TVET CDAC Council Secretariat, Council Technical Committee Members, Horticulture and Food Safety SSAC members and all those who participated in the development, review and development of these occupational standards.

**CHAIRPERSON, TVET CDACC**

# ACKNOWLEDGMENT

These Occupational Standards were developed through the combined efforts of various stakeholders from both private and public organizations. I am most sincerely thankful to the management of these organizations for allowing their staff to participate in this important course. I wish to acknowledge the invaluable contribution of industry players who provided valuable inputs towards the development of these occupational standards.

My gratitude goes to the various individuals who participated in workshops to develop these occupational standards. To each one of you I say thank you. I also sincerely thank the various facilitators that moderated the workshops and ensured that all deliberations and outputs were captured and compiled.

I cannot forget to thank TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) who provided guidance on the development of these occupational standards.

I wish to express my sincere gratitude to Horticulture Sector Skills Advisory Committee (SSAC) members for their immense contribution in the development of these occupational standards.

I also wish to sincerely thank all the individuals and organizations who participated during the validation of these occupational standards.

I am indebted to NEPAD Planning and Coordinating Agency (NPCA) of the Africa Union Commission and German Ministry of Economic Cooperation and Development (BMZ) through its implementing agency German International Cooperation (GIZ) GmbH which enabled the development of these occupational standards through the CAADP ATVET project.

I also appreciate the efforts of the office of National Coordinator of GIZ CAADP ATVET Project which was instrumental in enabling the smooth and close cooperation between the project and the ministries of Agriculture, Livestock and Fisheries (MoALF) and Education.

Much gratitude goes to Micro Enterprises Support Program Trust (MESPT) who initiated the review process and the incorporation of Food Safety in the Curriculum. I acknowledge the Danish International Development Agency (DANIDA) and the European Union (EU) who sponsored the review process.

Lastly, I also acknowledge any other person, institution, organization or company who in one way or another contributed to the success of this process but has not been mentioned.

**CHAIRPERSON**

**HORTICULTURE SECTOR SKILLS ADVISORY COMMITTEE**

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# ACRONYMS AND ABBREVIATIONS

ATVET : Agricultural Technical and Vocational Education and Training

BC : Basic Competency

CAADP : Comprehensive Africa Agricultural Development Programme

|  |  |
| --- | --- |
| CR | : Core Competency |
| EMCA | : Environment Management Coordination Act |
| GAP | : Good Agricultural Practices |
| HCD | : Horticultural Crops Directorate |
| HO | : Horticulture |
| HP | : Horticulture Producer |
| ICT | : Information Communication Technology |
| MoALF | : Ministry of Agriculture, Livestock and Fisheries |
| MoE | : Ministry of Education |
| NEPAD | : New Partnership for Africa’s Development |
| NPCA | : NEPAD Planning and Coordination Agency |
| OS | : Occupational Standards |
| OSH | : Occupation Safety and Health |
| OSHA | : Occupation Safety and Health Act |
| OSHS | : Occupational Safety and Health Standards |
| PPE | : Personal Protective Equipment |
| SSAC | : Sector Skills Advisory Committee |
| TVET | : Technical and Vocational Education and Training |

TVET CDACC: TVET Curriculum Development Assessment and Certification Council

# KEY TO UNIT CODE

**HO /OS /**

**HP**

**/BC /01/ 6 / B**

Industry or sector

Occupational Standards

Occupational area

Type of competency

Competency number

Competency Level

Control Version

# OVERVIEW

Horticultural Produce Processing Unit Manager Qualification Level 6 consists of competencies that an individual must achieve to store horticultural produce, process horticultural fruits, vegetables, flowers, nuts and to process horticultural herbs and spices.

It also enables an individual to supervise horticultural unit processing operations and manage horticultural processing unit.

The units of competency comprising Horticultural Produce Processing Unit Manager Level 6 qualification include the following:

**BASIC UNITS OF COMPETENCY**:

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| HO/OS/HG/BC/01/6/B | Demonstrate communication skills |
| HO/OS/HG/BC/02/6/B | Demonstrate numeracy skills |
| HO/OS/HG/BC/03/6/B | Demonstrate digital literacy |
| HO/OS/HG/BC/04/6/B | Demonstrate entrepreneurial skills |
| HO/OS/HG/BC/05/6/B | Demonstrate employability skills |
| HO/OS/HG/BC/06/6/B | Demonstrate environmental literacy |
| HO/OS/HG/BC/07/6/B | Demonstrate occupational safety and health practices |

**CORE UNITS OF COMPETENCY**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| HO/OS/HG/CR/016/B | Store horticultural produce |
| HO/OS/HG/CR/02/6/B | Process horticultural fruits |
| HO/OS/HG/CR/03/6/B | Process horticultural vegetables |
| HO/OS/HG/CR/04/6/B | Process horticultural flowers |
| HO/OS/HG/CR/05/6/B | Process horticultural nuts |
| HO/OS/HG/CR/06/6/B | Process horticultural herbs and spices |
| HO/OS/HG/CR/07/6/B | Supervise horticultural unit processing operations |
| HO/OS/HG/CR/08/6/B | Manage horticultural processing unit |

# BASIC UNITS OF COMPETENCY

# DEMONSTRATE COMMUNICATION SKILLS

**UNIT CODE:** HO/OS/HG/BC/01/6/B

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate communication skills. It involves meeting communication needs of clients and colleagues, developing communication strategies, establishing and maintaining communication pathways, conducting interviews, facilitating group discussion and representing the organization.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Meet communication needs of clients and colleagues | 1. Specific communication needs of clients and colleagues are identified and met based on workplace requirements 2. Different communication approaches are identified and applied according to clients’ needs 3. Conflict is identified and addressed as per the standards of the organization |
| 1. Develop communication strategies | * 1. Strategies for effective internal and external dissemination of information are developed as per organization’s requirements   2. Special communication needs are considered in developing strategies according workplace procedures   3. ***Communication strategies*** are analyzed, evaluated and revised based the workplace needs |
| 1. Establish and maintain communication pathways | * 1. Pathways of communication are established as per organization policy   2. Pathways are maintained and reviewed according to organization procedures |
| 1. Promote use of communication strategies | * 1. Information is provided to all areas of the organization as per strategy requirements   2. Effective communication techniques are articulated and modeled according work requirements   3. Personnel are given guidance about adapting communication strategies as per organization procedures |
| 1. Conduct interview | 1. A range of appropriate communication strategies are employed in ***interview situations*** based on the workplace requirements 2. Records of interviews are made and maintained in accordance with organizational procedures 3. Effective questioning, listening and nonverbal communication techniques are used as per needs |
| 1. Facilitate group discussion | 1. Mechanisms to enhance ***effective group interaction*** are identified and implemented according to workplace requirements 2. Strategies to encourage group participation are identified and used as per organizations’ procedures 3. Meetings objectives and agenda are set and followed based on workplace requirements 4. Relevant information is provided and feedback obtained according to set protocols 5. Evaluation of group communication strategies is undertaken in accordance with workplace guidelines 6. Specific communication needs of individuals are identified and addressed as per individual needs |
| 1. Represent the organization | 1. 7Relevant presentation are researched and presented based on internal or external communication forums requirements 2. Presentation is delivered in a clear and sequential manner as per the predetermined time 3. Presentation is made as per appropriate media 4. Difference views are respected based on workplace procedures 5. Written communication is done as per organizational standards 6. Inquiries are responded according to organizational standard |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Communication strategies may include but not limited to: | * Language switch * Comprehension check * Repetition * Asking confirmation * Paraphrase * Clarification request * Translation * Restructuring * Approximation * Generalization |
| 1. Effective group interaction may include but not limited to: | * Identifying and evaluating what is occurring within an interaction in a nonjudgmental way * Using active listening * Making decision about appropriate words, behavior * Putting together response which is culturally appropriate * Expressing an individual perspective * Expressing own philosophy, ideology and background and exploring impact with relevance to communication |
| 1. Situations may include but not limited to: | * Establishing rapport * Eliciting facts and information * Facilitating resolution of issues * Developing action plans * Diffusing potentially difficult situations |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Communication
* Active listening
* Interpretation
* Negotiation
* Writing

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Communication process
* Dynamics of groups
* Styles of group leadership
* Key elements of communications strategy

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   1. Developed communication strategies to meet the organization requirements and applied in the workplace 2. Established and maintained communication pathways for effective communication in the workplace 3. Used communication strategies involving exchanges of complex oral information |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Direct observation 2. Oral questioning 3. Written texts |
| 1. Context of Assessment | Competency may be assessed:   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE NUMERACY SKILLS

**UNIT CODE:** HO/OS/HG/BC/02/6/B

**UNIT DESCRIPTION**

This unit describes the competencies required to demonstrate numeracy skills. It involves; applying a wide range of mathematical calculations for work; applying ratios, rates and proportions to solve problems; estimating, measuring and calculating measurement for work; using detailed maps to plan travel routes for work; using geometry to draw and construct 2D and 3D shapes for work; collecting, organizing and interpreting statistical data; using routine formula and algebraic expressions for work and using common functions of a scientific calculator.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range.*** |
| 1. Apply a wide range of mathematical calculations for work | * 1. Mathematical information embedded in a range of workplace tasks and texts is extracted as per workplace procedures.   2. Mathematical information is interpreted and comprehended as per job specifications   3. A range of mathematical and problem solving processes are selected and used as per job specification   4. Different forms of fractions, decimals and percentages are flexibly used as per SOPs   5. Calculation performed with positive and negative numbers as per SOPs   6. Numbers are expressed as powers and roots and are used in calculations as per SOPs   7. Calculations done using routine formulas as per SOPs   8. Estimation and assessment processes are used to check outcome as per workplace procedures   9. Mathematical language is used to discuss and explain the processes, results and implications of the task as per workplace procedures |
| 1. Use and apply ratios, rates and proportions for work | * 1. Information regarding ratios, rates and proportions extracted from a range of workplace tasks and texts as per SOPs   2. Mathematical information related to ratios, rate and proportions is analysed as per SOPs   3. Problem solving processes are used to undertake the task as per workplace procedures   4. Equivalent ratios and rates are simplified as per SOPs   5. Quantities are calculated using ratios, rates and proportions as per SOPS   6. Graphs, charts or tables are constructed to represent ratios, rates and proportions as per SOPs   7. The outcomes reviewed and checked as per job specifications   8. Information is record using mathematical language and symbols as per workplace procedures |
| 1. Estimate, measure and calculate measurement for work | * 1. Measurement information embedded in workplace texts and tasks are extracted and interpreted as per job specifications   2. Appropriate workplace measuring equipment are identified and selected as per job specifications   3. Accurate measurements are estimated and made as per SOPs   4. The area of ***2D shapes*** including compound shapes are calculated as per SOPs   5. The volume of 3D shapes is calculated using relevant formulas as per SOPs   6. Sides of right angled triangles are calculated using Pythagoras’ theorem as per SOPs   7. conversions are perform between units of measurement as per job specification   8. Problem solving processes are used to undertake the task as per workplace Procedures   9. The measurement outcomes are reviewed and checked as per workplace procedures   10. Information is recorded using mathematical language and symbols appropriate for the task as per workplace procedures |
| 1. Use detailed maps to plan travel routes for work | * 1. Different types of maps are identified and interpreted as per job requirements   2. Key features of maps are identified as per job requirements   3. Scales are identified and interpreted as per job requirements   4. Scales are applied to calculate actual distances   5. Positions or locations are determined using directional information as per job requirements   6. Routes are planned by determining directions and calculating distances, speeds and times as per job requirements   7. Information is gathered and identified and relevant factors related to planning a route checked as per job requirements   8. Relevant equipment is select and checked for accuracy and operational effectiveness as per job requirements   9. Task is planned and recorded using specialized mathematical language and symbols appropriate for the task as per job requirements |
| 1. Use geometry to draw 2D shapes and construct 3D shapes for work | * 1. A range of 2D shapes and 3D shapes and their uses in work contexts is identified as per job specifications   2. Features of 2D and 3D shapes are named and described as per job specifications   3. Types of angles in 2D and 3D shapes are identified as per job specifications   4. Angles are drawn, estimated and measured using geometric instruments as per job requirements   5. Angle properties of 2D shapes are named and identified as per SOPs   6. Angle properties are used to evaluate unknown angles in shapes as per SOPs   7. Properties of perpendicular and parallel lines are applied to shapes as per SOPs   8. Understanding and use of symmetry is demonstrated as per SOPs   9. Understanding and use of similarity is demonstrated as per SOPs   10. The workplace tasks and mathematical processes required are identified as per workplace procedures   11. 2D shapes is drawn for work as per job specification   12. 3D shapes is constructed for work as per job specification   13. The outcomes are reviewed and checked as per workplace procedures   14. Specialized mathematical language and symbols appropriate for the task are used as per SOPs |
| 1. Collect, organize, and interpret statistical data for work | * 1. Workplace issue requiring investigation are identified as per workplace procedures   2. Audience / population / sample unit is determined as per workplace procedures as per workplace procedures   3. Data to be collected is identified as per workplace procedures   4. Data collection method is selected as per workplace procedures   5. Appropriate statistical data is collected and organized as per SOPs   6. Data is illustrated in appropriate formats as per SOPs   7. The effectiveness of different types of graphs are compared as per SOPs   8. The summary statistics for collected data is calculated as per SOPs   9. The results / findings are interpreted as per SOPs   10. Data is checked to ensure that it meets the expected results and content as per workplace procedures   11. Information from the results including tables, graphs and summary statistics is extracted and interpreted as per workplace procedure   12. Mathematical language and symbols are used to report results of investigation as per workplace procedure |
| 1. Use routine formula and algebraic expressions for work | * 1. Understanding of informal and symbolic notation, representation and conventions of algebraic expressions is demonstrated as per SOPs   2. Simple algebraic expressions and equations are developed as per job specification   3. Operate on algebraic expressions as per job requirement   4. Algebraic expressions are simplified as per job requirement   5. Substitution into simple routine equations is done as per SOPs   6. Routine formulas used for work tasks are identified and comprehended as per SOPs   7. Routine formulas are evaluate by substitution as per SOPs   8. Routine formulas transposed as per SOPs   9. Appropriate formulas are identified and used for work related tasks as per workplace procedures   10. Outcomes are checked and result of calculation used as per workplace procedures |
| 1. Use common functions of a scientific calculator for work | * 1. Required numerical information to perform tasks is located as per job specification   2. The order of operations and function keys necessary to solve mathematical calculation are determined as per job specification   3. Function keys on a scientific calculator are identified and used as per SOPs   4. Estimations are referred to check reasonableness of problem solving process as per workplace procedures   5. Appropriate mathematical language, symbols and conventions are used to report results as per workplace procedures |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. 2D shapes may include but not limited may include but not limited to: | * Triangles * Square * Rectangle * Triangle |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Measuring
* Logical thinking
* Computing
* Drawing of graphs
* Applying mathematical formulas
* Analytical

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Types of common shapes
* Differentiation between two dimensional shapes / objects
* Formulae for calculating area and volume
* Types and purpose of measuring instruments
* Units of measurement and abbreviations
* Fundamental operations (addition, subtraction, division, multiplication)
* Rounding techniques
* Types of fractions
* Different types of tables and graphs
* Meaning of graphs, such as increasing, decreasing, and constant value
* Preparation of basic data, tables & graphs

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   1. Developed communication strategies to meet the organization requirements and applied in the workplace 2. Established and maintained communication pathways for effective communication in the workplace 3. Used communication strategies involving exchanges of complex oral information |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation 2. Oral questioning 3. Written test 4. Portfolio of Evidence 5. Interview 6. Third party report |
| 1. Context of Assessment | Competency may be assessed:   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE DIGITAL LITERACY

**UNIT CODE:** HO/OS/HG/BC/03/6/B

**UNIT DESCRIPTION**

This unit describes competencies required to demonstrate digital literacy. It involves, identifying computer software and hardware, applying security measures to data, hardware, and software in automated environment, applying computer software in solving task, applying internet and email in communication at workplace, applying desktop publishing in official assignments and preparing presentation packages.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Identify appropriate computer software and hardware | * 1. Concepts of ICT are determined in accordance with computer equipment   2. Classifications of computers are determined in accordance with manufacturers specification   3. Appropriate computer software is identified according to manufacturer’s specification   4. Appropriate computer hardware is identified according to manufacturer’s specification   5. Functions and commands of operating system are determined in accordance with manufacturer’s specification |
| 1. Apply security measures to data, hardware, software in automated environment | * 1. ***Data security and privacy are classified*** in accordance with the prevailing technology   2. ***Security threats*** reidentified ***and control measures*** are applied in accordance with laws governing protection of ICT   3. Computer threats and crimes are detected in accordance to Information Management security guidelines   4. Protection against computer crimes is undertaken in accordance with laws governing protection of ICT |
| 1. Apply computer software in solving tasks | * 1. ***Word processing concepts*** are applied in resolving workplace tasks, report writing and documentation as per the job requirements   2. ***Word processing utilities*** are applied in accordance with workplace procedures   3. Worksheet layout is prepared in accordance with work procedures   4. Worksheet is built and data manipulated in the worksheet in accordance with workplace procedures   5. Continuous data manipulated on worksheet is undertaken in accordance with work requirements   6. Database design and manipulation is undertaken in accordance with office procedures   7. Data sorting, indexing, storage, retrieval and security is provided in accordance with workplace procedures |
| 1. Apply internet and email in communication at workplace | * 1. Electronic mail addresses are opened and applied in workplace communication in accordance with office policy   2. Office internet functions are defined and executed in accordance with office procedures   3. ***Network configuration*** is determined in accordance with office operations procedures   4. Official World Wide Web is installed and managed according to workplace procedures |
| 1. Apply Desktop publishing in official assignments | * 1. Desktop publishing functions and tools are identified in accordance with manufactures specifications   2. Desktop publishing tools are developed in accordance with work requirements   3. Desktop publishing tools are applied in accordance with workplace requirements   4. Typeset work is enhanced in accordance with workplace standards |
| 1. Prepare presentation packages | * 1. Types of presentation packages are identified in accordance with office requirements   2. Slides are created and formulated in accordance with workplace procedures   3. Slides are edited and run-in accordance with work procedures   4. Slides and handouts are printed according to work requirements |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Appropriate computer hardware may include but not limited to: | Collection of physical parts of a computer system such as:   * Computer case, monitor, keyboard, and mouse * All the parts inside the computer case, such as the hard disk drive, motherboard and video card |
| 1. Data security and privacy may include but not limited to: | * Confidentiality of data * Cloud computing * Integrity -but-curious data surfing |
| 1. Security and control measures may include but not limited to: | * Counter measures against cyber terrorism * Risk reduction * Cyber threat issues * Risk management * Pass-wording |
| 1. Security threats may include but not limited to: | * Cyber terrorism * Hacking |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Analytical skills
* Interpretation
* Typing
* Communication
* Computing (applying fundamental operations such as addition, subtraction, division and multiplication)
* Using calculator
* Basic ICT skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Software concept
* Functions of computer software and hardware
* Data security and privacy
* Computer security threats and control measures
* Technology underlying cyber-attacks and networks
* Cyber terrorism
* Computer crimes
* Detection and protection of computer crimes
* Laws governing protection of ICT
* Word processing;
  + - Functions and concepts of word processing.
    - Documents and tables creation and manipulations
    - Mail merging
    - Word processing utilities
* Spread sheets;
  + - Meaning, formulae, function and charts, uses and layout
    - Data formulation, manipulation and application to cells
* Database;
  + - Database design, data manipulation, sorting, indexing, storage retrieval and security
* Desktop publishing;
  + - Designing and developing desktop publishing tools
    - Manipulation of desktop publishing tools
    - Enhancement of typeset work and printing documents
* Presentation Packages;
  + - Types of presentation Packages
    - Creating, formulating, running, editing, printing and presenting slides and handouts
* Networking and Internet;
  + - Computer networking and internet.
    - Electronic mail and world wide web
* Emerging trends and issues in ICT;
  + - Identify and integrate emerging trends and issues in ICT
    - Challenges posed by emerging trends and issues

**EVIDENCE** **GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified and controlled security threats   2. Detected and protected computer crimes   3. Applied word processing in office tasks   4. Designed, prepared work sheet and applied data to the cells in accordance to workplace procedures   5. Opened electronic mail for office communication as per workplace procedure   6. Installed internet and World Wide Web for office tasks in accordance with office procedures   7. Integrated emerging issues in computer ICT applications   8. Applied laws governing protection of ICT |
| 1. Resource Implications | The following resources should be provided:   * 1. Access to relevant workplace where assessment can take place   2. Appropriately simulated environment where assessment can take place |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Competency may be assessed:   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE ENTREPRENEURIAL SKILLS

**UNIT CODE :** HO/OS/HG/BC/04/6/B

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate understanding of entrepreneurship. It involves demonstrating understanding of an entrepreneur, entrepreneurship, and self-employment, identifying entrepreneurship opportunities, creating entrepreneurial awareness, applying entrepreneurial motivation, developing business innovative strategies and developing business plan.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT** | **PERFORMANCE CRITERIA** |
| 1. Demonstrate understanding of an entrepreneur | 1. Entrepreneurs and Business persons are distinguished as per principles of entrepreneurship 2. ***Types of entrepreneurs*** are identified as per principles of entrepreneurship 3. Ways of becoming an entrepreneur are identified as per principles of Entrepreneurship 4. ***Characteristics of Entrepreneurs*** are identified as per principles of Entrepreneurship 5. Factors affecting Entrepreneurship development are explored as per principles of Entrepreneurship |
| 1. Demonstrate understanding of Entrepreneurship and self-employment | 1. Entrepreneurship and self-employment are distinguished as per principles of entrepreneurship 2. Importance of self-employment is analysed based on business procedures and strategies 3. ***Requirements for entry into self-employment*** are identified according to business procedures and strategies 4. Role of an Entrepreneur in business is determined according to business procedures and strategies 5. Contributions of Entrepreneurs to National development are identified as per business procedures and strategies 6. Entrepreneurship culture in Kenya is explored as per business procedures and strategies 7. Born or made Entrepreneurs are distinguished as per entrepreneurial traits |
| 1. Identify Entrepreneurship opportunities | 1. Sources of business ideas are identified as per business procedures and strategies 2. Business ideas and opportunities are generated as per business procedures and strategies 3. Business life cycle is analysed as per business procedures and strategies 4. Legal aspects of business are identified as per procedures and strategies 5. Product demand is assessed as per market strategies 6. Types of ***business environment*** are identified and evaluated as per business procedures 7. Factors to consider when evaluating business environment are explored based on business procedure and strategies 8. Technology in business is incorporated as per best practice |
| 1. Create entrepreneurial awareness | 1. ***Forms of businesses*** are explored as per business procedures and strategies 2. Sources of business finance are identified as per business procedures and strategies 3. Factors in selecting source of business finance are identified as per business procedures and strategies 4. ***Governing policies*** on Small Scale Eenterprises (SSEs) are determined as per business procedures and strategies 5. Problems of starting and operating SSEs are explored as per business procedures and strategies |
| 1. Apply entrepreneurial motivation | 1. ***Internal and external motivation*** factors are determined in accordance with motivational theories 2. Self-assessment is carried out as per entrepreneurial orientation 3. Effective communications are carried out in accordance with communication principles 4. Entrepreneurial motivation is applied as per motivational theories |
| 1. Develop innovative business strategies | 1. Business innovation strategies are determined in accordance with the organization strategies 2. Creativity in business development is demonstrated in accordance with business strategies 3. ***Innovative business strategies*** are developed as per business principles 4. Linkages with other entrepreneurs are created as per best practice 5. ICT is incorporated in business growth and development as per best practice |
| 1. Develop Business Plan | 1. Identified Business is described as per business procedures and strategies 2. Marketing plan is developed as per business plan format 3. Organizational/Management plan is prepared in accordance with business plan format 4. Production/operation plan in accordance with business plan format 5. Financial plan is prepared in accordance with the business plan format 6. Executive summary is prepared in accordance with business plan format 7. Business plan is presented as per best practice |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Types of entrepreneurs may include but not limited to: | * Innovators * Imitators * Craft * Opportunistic * Speculators |
| 1. Characteristics of Entrepreneurs may include but not limited to: | * Creative * Innovative * Planner * Risk taker * Networker * Confident * Flexible * Persistent * Patient * Independent * Future oriented * Goal oriented |
| 1. Requirements for entry into self-employment may include but not limited to | * Technical skills * Management skills * Entrepreneurial skills * Resources * Infrastructure |
| 1. Internal and external motivation may include but not limited to: | * Interest * Passion * Freedom * Prestige * Rewards * Punishment * Enabling environment * Government policies |
| 1. Business environment may include but not limited to: | * External * Internal * Intermediate |
| 1. Forms of businesses may include but not limited to: | * Sole proprietorship * Partnership * Limited companies * Cooperatives |
| 1. Governing policies may include but not limited to: | * Increasing scope for finance * Promoting cooperation between entrepreneurs and private sector * Reducing regulatory burden on entrepreneurs * Developing IT tools for entrepreneurs |
| 1. Innovative business strategies may include but not limited to: | * New products * New methods of production * New markets * New sources of supplies * Change in industrialization |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Analytical
* Management
* Problem-solving
* Root-cause analysis
* Communication

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Decision making
* Business communication
* Change management
* Competition
* Risk
* Net working
* Time management
* Leadership
* Factors affecting entrepreneurship development
* Principles of Entrepreneurship
* Features and benefits of common operational practices, e. g., continuous improvement (kaizen), waste elimination,
* Conflict resolution
* Health, safety and environment (HSE) principles and requirements
* Customer care strategies
* Basic financial management
* Business strategic planning
* Impact of change on individuals, groups and industries
* Government and regulatory processes
* Local and international market trends
* Product promotion strategies
* Market and feasibility studies
* Government and regulatory processes
* Local and international business environment
* Relevant developments in other industries
* Regional/ County business expansion strategies

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | 1. Assessment requires evidence that the candidate: 2. Distinguished entrepreneurs and businesspersons correctly 3. Identified ways of becoming an entrepreneur appropriately 4. Explored factors affecting entrepreneurship development appropriately 5. Analysed importance of self-employment accurately 6. Identified requirements for entry into self-employment correctly 7. Identified sources of business ideas correctly 8. GeneratedBusiness ideas and opportunities correctly 9. Analysed business life cycle accurately 10. Identified legal aspects of business correctly 11. Assessed product demand accurately 12. Determined Internal and external motivation factors appropriately 13. Carried out communications effectively 14. Identified sources of business finance correctly 15. Determined Governing policy on small scale enterprise appropriately 16. Explored problems of starting and operating SSEs effectively 17. Developed Marketing, Organizational/Management, Production/Operation and Financial plans correctly 18. Prepared executive summary correctly 19. Determined business innovative strategies appropriately 20. Presented business plan effectively |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace where assessment can take place 2. Appropriately simulated environment where assessment can take place |
| 1. Methods of Assessment | 1. Written tests 2. Oral questions 3. Third party report 4. Interviews 5. Portfolio of Evidence |
| 1. Context of Assessment | Competency may be assessed   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE EMPLOYABILITY SKILLS

**UNIT CODE:** HO/OS/HG/BC/05/6/B

**UNIT DESCRIPTON**

This unit covers competencies required to demonstrate employability skills. It involves conducting self-management, demonstrating interpersonal communication, critical safe work habits, leading a workplace team, planning and organizing work, maintaining professional growth and development, demonstrating workplace learning, problem solving skills and managing ethical performance.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Conduct self-management | 1. Personal vision, mission and goals are formulated based on potential and in relation to organization objectives 2. Emotional intelligence is demonstrated as per workplace requirements. 3. Individual performance is evaluated and monitored according to the agreed targets. 4. Assertiveness is developed and maintained based on the requirements of the job. 5. Accountability and responsibility for own actions are demonstrated based on workplace instructions. 6. Self-esteem and a positive self-image are developed and maintained based on values. 7. Time management, attendance and punctuality are observed as per the organization policy. 8. Goals are managed as per the organization’s objective 9. Self-strengths and weaknesses are identified based on personal objectives |
| 1. Demonstrate interpersonal communication | 1. Writing skills are demonstrated as per communication policy 2. Negotiation and persuasion skills are demonstrated as per communication policy 3. Internal and external stakeholders’ needs are identified and interpreted as per the communication policy 4. Communication networks are established based on workplace policy 5. Information is shared as per communication policy |
| 1. Demonstrate critical safe work habits | * 1. Stress is managed in accordance with workplace policy.   2. Punctuality and time consciousness is demonstrated in line with workplace policy.   3. Personal objectives are integrated with organization goals based on organization’s strategic plan.   4. ***Resources*** are utilized in accordance with workplace policy.   5. Work priorities are set in accordance to workplace goals and objectives.   6. Leisure time is recognized and utilized in line with personal objectives.   7. ***Drugs and substances of abuse*** are identified and avoided based on workplace policy.   8. HIV and AIDS prevention awareness is demonstrated in line with workplace policy.   9. Safety consciousness is demonstrated in the workplace based on organization safety policy.   10. ***Emerging issues*** are identified and dealt with in accordance with organization policy. |
| 1. Lead a workplace team | 1. Performance targets for the ***team*** are set based on organization’s objectives 2. Duties are assigned in accordance with the organization policy. 3. ***Forms of communication*** in a team are established according to organization’s policy. 4. Team performance is evaluated based on set targets as per workplace policy. 5. Conflicts are resolved between team members in line with organization policy. 6. Gender related issues are identified and mainstreamed in accordance workplace policy. 7. Human rights and fundamental freedoms are identified and respected as Constitution of Kenya 2010. 8. Healthy relationships are developed and maintained in line with workplace. |
| 1. Plan and organize work | 1. Work plans are prepared based on activities and budget. 2. Assigned tasks are interpreted and expectations identified as per the workplace instructions. 3. Task occupational safety and health requirements are identified and observed regulations. 4. Work resources are identified, mobilized, allocated and utilized based on organization work plans. 5. Work activities are monitored and evaluated in line with work plans and workplace policy. 6. Work plans are reviewed based on target and available resources. |
| 1. Maintain professional growth and development | * 1. Personal training needs are identified and assessed in line with the requirements of the job.   2. ***Training and career opportunities*** are identified and utilized based on job requirements.   3. Resources for training are mobilized and allocated based organizations and individual skills needs.   4. Licensees and certifications relevant to job and career are obtained and renewed as per policy.   5. Work priorities and personal commitments are balanced and managed based on requirements of the job and personal objectives.   6. Recognitions are sought as proof of career advancement in line with professional requirements. |
| 1. Demonstrate workplace learning | * 1. Learning opportunities are sought and managed based on job requirement and organization policy.   2. Improvement in performance is demonstrated based on courses attended.   3. Application of learning is demonstrated in both technical and non-technical aspects based on requirements of the job   4. Time and effort is invested in learning new skills based on job requirements   5. Initiative is taken to create more effective and efficient processes and procedures in line with workplace policy.   6. New systems are developed and maintained in accordance with the requirements of the job.   7. Awareness of personal role in workplace ***innovation*** is demonstrated based on requirements of the job. |
| 1. Demonstrate problem solving skills | * 1. Creative, innovative and practical solutions are developed based on the problem   2. Independence and initiative in identifying and solving problems is demonstrated based on requirements of the job.   3. Team problems are solved as per the workplace guidelines   4. Problem solving strategies are applied as per the workplace guidelines   5. Problems are analyzed and assumptions tested as per the context of data and circumstances |
| 1. Manage ethical performance | * 1. Policies and guidelines are observed as per the workplace requirements   2. Self-worth and professionalism is exercised in line with personal goals and organizational policies   3. Code of conduct is observed as per the workplace requirements   4. Integrity is demonstrated as per legal requirement |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Drug and substance abuse may include but not limited to: | Commonly abused   * Alcohol * Tobacco * Miraa * Over-the-counter drugs * Cocaine * Bhang * Glue |
| 1. Feedback may include but not limited to: | * Verbal * Written * Informal * Formal |
| 1. Relationships may include but not limited to: | * Man/Woman * Trainer/trainee * Employee/employer * Client/service provider * Husband/wife * Boy/girl * Parent/child * Sibling relationships |
| 1. Forms of communication may include but not limited to: | * Written * Visual * Verbal * Non verbal * Formal and informal |
| 1. Team may include but not limited to: | * Small work group * Staff in a section/department * Inter-agency group |
| 1. Personal growth may include but not limited to: | * Growth in the job * Career mobility * Gains and exposure the job gives * Net workings * Benefits that accrue to the individual as a result of noteworthy performance |
| 1. Personal objectives may include but not limited to: | * Long term * Short term * Broad * Specific |
| 1. Trainings and career opportunities may includes but not limited to | * Participation in training programs * Serving as Resource Persons in conferences and workshops |
| 1. Resource may include may but not limited to: | * Human * Financial * Technology |
| 1. Innovation may include but not limited to: | * New ideas * Original ideas * Different ideas * Methods/procedures * Processes * New tools |
| 1. Emerging issues may include but not limited to: | * Terrorism * Social media * National cohesion * Open offices |
| 1. Range of media for learning may include but not limited to: | * Mentoring * peer support and networking * IT and courses |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Interpersonal
* Communication
* Critical thinking
* Organizational
* Negotiation
* Monitoring
* Evaluation
* Record keeping
* Problem solving
* Decision Making
* Resource utilization
* Resource mobilization

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Work values and ethics
* Company policies
* Company operations, procedures and standards
* Occupational Health and safety procedures
* Fundamental rights at work
* Workplace communication
* Concept of time
* Time management
* Decision making
* Types of resources
* Work planning
* Organizing work
* Monitoring and evaluation
* Record keeping
* Gender mainstreaming
* HIV and AIDS
* Drug and substance abuse
* Professional growth and development
* Technology in the workplace
* Innovation
* Emerging issues

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   * 1. Conducted self-management   2. Demonstrated interpersonal communication   3. Demonstrated critical safe work habits   4. Demonstrated the ability to lead a workplace team   5. Planned and organized work   6. Maintained professional growth and development   7. Demonstrated workplace learning   8. Demonstrated problem solving skills   9. Demonstrated the ability to manage performance ethically |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace where assessment can take place 2. Appropriately simulated environment where assessment can take place |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation 2. Oral questioning 3. Written test 4. Portfolio of Evidence 5. Interview 6. Third party report |
| 1. Context of Assessment | Competency may be assessed:   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE ENVIRONMENTAL LITERACY

**UNIT CODE:** HO/OS/HG/BC/06/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate environmental literacy. It involves, controlling environmental hazard and environmental pollution, demonstrating sustainable resource use, evaluating current practices in relation to resource usage, identifying environmental legislations/conventions for environmental concerns, implementing specific environmental programs, monitoring activities on environmental protection/Programs, analyzing resource use and developing resource conservation plans

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Control environmental hazard | 1. Storage methods for environmentally hazardous materials are strictly followed according to environmental regulations and OSHS. 2. Disposal methods of hazardous wastes are followed according to environmental regulations and OSHS. 3. ***PPE*** is used according to OSHS. |
| 1. Control environmental Pollution | * 1. Environmental pollution ***control measures*** are implemented in accordance with international protocols.   2. Procedures for solid waste management are observed according Environmental Management and Coordination Act 1999   3. Methods for minimizing noise pollution is complied with based on *Noise* and Excessive Vibration *Pollution and*  *Control Regulations*, 2009 |
| 1. Demonstrate sustainable resource use | * 1. Methods for minimizing wastage are complied with based on organizational waste management guide   2. Waste management procedures are employed following principles of 3Rs (Reduce, Reuse, Recycle)   3. Methods for economizing and reducing resource consumption are practiced as per the Constitution of Kenya 2010 Article 69. |
| 1. Evaluate current practices in relation to resource usage | * 1. Information on resource efficiency systems and procedures are collected and provided as per work groups/sector   2. Current resource usage is measured and recorded as per work group   3. Current purchasing strategies are analyzed and recorded according to industry procedures.   4. Current work processes to access information and data is analyzed following enterprise protocol. |
| 1. Identify environmental legislations/conventions for environmental concerns | 1. Environmental legislations/conventions and local ordinances are identified according to the different environmental aspects/impact 2. Industrial standard/environmental practices are described according to the different environmental concerns |
| 1. Implement specific environmental programs | 1. Programs/Activities are identified according to organizations policies and guidelines. 2. Individual roles/responsibilities are determined and performed based on the activities identified. 3. Problems/constraints encountered are resolved in accordance with organizations’ policies and guidelines 4. Stakeholders are consulted based on company guidelines |
| 1. Monitor activities on Environmental protection/Programs | 1. Activities are periodically monitored and Evaluated according to the objectives of the environmental program 2. Feedback from stakeholders are gathered and considered in Proposing enhancements to the program based on consultations 3. Data gathered are analyzed based on Evaluation requirements 4. Recommendations are submitted based on the findings 5. Management support systems are set/established to sustain and enhance the program 6. Environmental incidents are monitored and reported to 7. concerned/proper authorities |
| 1. Analyze resource use | 1. All resource consuming processes are Identified as per the organizational work plan 2. Quantity and nature of resource consumed is determined based on processes 3. Resource flow is analyzed as per different parts of the process. 4. Wastes are classified according to NEMA regulations on waste management. |
| 1. Develop resource Conservation plans | 9.1. Efficiency of use/conversion of resources is determined according to industry protocol.  9.2. Causes of low efficiency of use of resources are Determined based on industry protocol.  9.3. Plans for increasing the efficiency of resource use are developed based on findings. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. PPE may include but not limited to | * Mask * Gloves * Goggles * Safety hat * Overall * Hearing protector |
| 1. Control measures may include but not limited to | * Methods for minimizing or stopping spread and ingestion of airborne particles * Methods for minimizing or stopping spread and ingestion of gases and fumes * Methods for minimizing or stopping spread and ingestion of liquid wastes |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* + Measuring
  + Recording
  + Analytical
  + Monitoring
  + Communication
  + Writing

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* + PPEs
  + Environmental regulations
  + OSHS
  + Pollution
  + Waste management
  + Principle of 3Rs
  + Types of resources
  + Techniques in measuring current usage of resources
  + Environmental hazards
  + Regulatory requirements

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Controlled environmental hazard   2. Controlled environmental pollution   3. Demonstrated sustainable resource use   4. Evaluated current practices in relation to resource usage   5. Demonstrated knowledge of environmental legislations and local ordinances according to the different environmental issues /concerns.   6. Described industrial standard environmental practices according to the different environmental issues/concerns.   7. Resolved problems/ constraints encountered based on management standard procedures   8. Implemented and monitored environmental practices on a periodic basis as per company guidelines   9. Recommended solutions for the improvement of the program   10. Monitored and reported to proper authorities any environmental incidents |
| 1. Resource Implications | The following resources should be provided:   * 1. Workplace with storage facilities   2. Tools, materials and equipment relevant to the tasks (e.g. Cleaning tools, cleaning materials, trash bags)   3. PPE, manuals and references   4. Legislation, policies, procedures, protocols and local ordinances relating to environmental protection   5. Case studies/scenarios relating to environmental Protection |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Competency may be assessed   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE OCCUPATIONAL SAFETY AND HEALTH PRACTICES

**UNIT CODE:** HO/OS/HG/BC/07/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate occupational health and safety practices. It involves identifying workplace hazards and risks, identifying and implementing appropriate control measures to hazards and risks and implementing OSH programs, procedures and policies/guidelines.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Identify workplace hazards and risk | 1.1 ***Hazards*** in the workplace are identified ***based their indicators***  1.2 Risks and hazards are evaluated based on legal requirements.  1.3 ***OSH concerns*** raised by workers are addressed as per legal requirements. |
| 1. Control OSH hazards | 2.1 Hazard prevention ***and control measures*** are implemented as per legal requirement.  2.2 Risk assessment is conductedand a risk matrix developed based on likely impact.  2.3 ***Contingency measures***, including ***emergency procedures*** during workplace ***incidents and emergencies*** are recognized and established in accordance with organization procedures. |
| 1. Implement OSH programs | 3.1 Company OSH program are identified, evaluated and reviewed based on legal requirements.  3.2 Company OSH programs are implemented as per legal requirements.  3.3 Workers are capacity built on OSH standards and procedures as per legal requirements  3.4 ***OSH-related records*** are maintained as per legal requirements. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Hazards may include but not limited to: | * Physical hazards – impact, illumination, pressure, noise, * vibration, extreme temperature, radiation * Biological hazards- bacteria, viruses, plants, parasites, mites, molds, fungi, insects * Chemical hazards – dusts, fibers, mists, fumes, smoke, gasses, vapors * Ergonomics * Psychological factors – over exertion/ excessive force, * awkward/static positions, fatigue, direct pressure, * varying metabolic cycles * Physiological factors – monotony, personal relationship, work out cycle * Safety hazards (unsafe workplace condition) –confined space, excavations, falling objects, gas leaks, electrical, poor storage of materials and waste, spillage, waste and debris * Unsafe workers’ act (Smoking in off-limited areas, Substance and alcohol abuse at work) |
| 1. Indicators may include but not limited to: | * Increased of incidents of accidents, injuries * Increased occurrence of sickness or health complaints/ symptoms * Common complaints of workers related to OSH * High absenteeism for work-related reasons |
| 1. OSH concerns may include but not limited to: | * Workers’ experience/observance on presence of work hazards * Unsafe/unhealthy administrative arrangements (prolonged work hours, no break time, constant overtime, scheduling of tasks) * Reasons for compliance/non-compliance to use of PPEs or other OSH procedures/policies/guidelines |
| 1. Safety gears /PPE (Personal Protective Equipment) may include but not limited to: | * Arm/Hand guard, gloves * Eye protection (goggles, shield) * Hearing protection (ear muffs, ear plugs) * Hair Net/cap/bonnet * Hard hat * Face protection (mask, shield) * Apron/Gown/coverall/jump suit * Anti-static suits * High-visibility reflective vest |
| 1. Appropriate risk controls   may include but not limited to: | * Appropriate risk controls in order of impact are as follows: * Eliminate the hazard altogether (i.e., get rid of the dangerous machine) * Isolate the hazard from anyone who could be harmed (i.e., keep the machine in a closed room and operate it remotely; barricade an unsafe area off) * Substitute the hazard with a safer alternative (i.e., replace the machine with a safer one) * Use administrative controls to reduce the risk (i.e., train workers how to use equipment safely; train workers about the risks of harassment; issue signage) * Use engineering controls to reduce the risk (i.e., attach guards to the machine to protect users) * Use personal protective equipment (i.e., wear   gloves and goggles when using the machine) |
| 1. Contingency measures may include but not limited to: | * Evacuation * Isolation * Decontamination * (Calling designed) emergency personnel |
| 1. Incidents and emergencies may include but not limited to: | * Chemical spills * Equipment/vehicle accidents * Explosion * Fire * Gas leak * Injury to personnel * Structural collapse * Toxic and/or flammable vapors emission. |
| 1. OSH-related Records may include but not limited to: | * Medical/Health records * Incident/accident reports * Sickness notifications/sick leave application * OSH-related trainings obtained |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Communication
* Interpersonal
* Presentation
* Risk assessment
* Evaluation
* Critical thinking
* Problem solving
* Negotiation

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* General OSH Principles
* Occupational hazards/risks recognition
* OSH organizations providing services on OSH evaluation and/or work environment measurements (WEM)
* National OSH regulations; company OSH policies and protocols
* Systematic gathering of OSH issues and concerns
* General OSH principles
* National OSH regulations
* Company OSH and recording protocols, procedures and policies/guidelines
* Training and/or counseling methodologies and strategies

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Identified hazards in the workplace based their indicators 2. Evaluated workplace hazards based on legal requirements. 3. Addressed OSH concerns raised by workers as per legal requirements. 4. Implemented hazard prevention and control measures as per legal requirement. 5. Conducted risk assessment as per legal requirement. 6. Developed risk matrix based on likely impact. 7. Recognized and established contingency measures in accordance with organization procedures. 8. Identified, evaluated and reviewed company OSH program based on legal requirements. 9. Implemented company OSH programs as per legal requirements. 10. Capacity built workers on OSH standards and procedures as per legal requirements 11. Maintained OSH-related records as per legal requirements. |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace where assessment can take place 2. Appropriately simulated environment where assessment can take place |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation 2. Oral questioning 3. Written test 4. Portfolio of Evidence 5. Interview 6. Third party report |
| 1. Context of Assessment | Competency may be assessed:   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# CORE UNITS OF COMPETENCY

# STORE HORTICULTURAL PRODUCE

**UNIT CODE:** HO/OS/HG/CR/01/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to store horticultural produce. It involves carrying out food safety risk assessment, developing food safety management plan, implementing the food safety management plan when setting up horticultural produce store, acquiring, receiving, sorting, cleaning, storing produce as well as maintaining cold chain, managing waste, evaluating implementation of the food safety management plan and preparing the required horticultural produce store documentation.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Carry out food safety risk assessment for produce storage | 1. Possible ***sources of food safety hazards*** are identified guided by the process flow diagram developed as per established ***standard*s** 2. The level of food safety risks is assessed and established as perthe previous use of the site/store and ***sources of materials*** 3. Risks are evaluated and characterized as per established ***evaluation******criteria*** |
| 1. Develop food safety management plan for produce storage | * 1. ***Resources*** are collected as per the risk assessment report   2. ***Food safety management plan is developed*** based on the risk assessment report   3. ***Preventive measures***are established as per identified risks   4. ***Corrective actions***are established as per identified risks   5. Standard operating procedures for preventing and mitigating food safety risks are developed based on the food safety management plan   6. The management plan isevaluated as per the established standards   7. Approval of the developed plan is sought from the top management |
| 1. Implement the food safety management plan for produce storage | 1. The management plan is adopted as per the laid down procedures 2. Communication of the plan is done to the entire team through the official channel 3. ***Resources***are availed as identified in the management plan 4. Practices and procedures for storage of horticultural produce are carried out and documented as per the management plan. |
| 1. Prepare to store horticultural produce | 1. Safety and environmental requirements are identified and   Environmental Impact Assessment (EIA) undertaken as per statutory requirements   1. ***Horticultural storage facility*** is set up as per horticultural storage facility design and type of produce. 2. ***Tools, materials &supplies and equipment*** required for storing horticultural produce are assembled based on the produce type, quantity and stores management policy 3. ***Horticultural produce*** is acquired based on the procurement procedures. 4. Horticultural produce is sorted and cleaned based on the produce quality. 5. Horticultural produce is graded and weighed based on the market demand assessment reports and the produce quality. 6. 4.7 Safety and environmental protection measures are adhered to according to work place policies and the legal requirements. |
| 1. Store horticultural produce | 1. Horticultural produce is packed based on the produce type, grades, market assessment reports and available storage space. 2. ***Packed horticultural produce*** is stored based on the produce type, grades and stores management policy. |
| 1. Evaluate horticultural produce stored | 1. Quality of horticultural produce is assessed based on market assessment reports and produce type. 2. The ***cost of storage*** is evaluated in relation to the produce type, market demand and produce quality and quantity. |
| 1. Evaluate implementation of the food safety management plan for produce storage | 1. Internal verification of the plan is carried out as per the management plan and ***statutory requirements*** 2. The implementation is assessed for its effectiveness and measures put in place for improvement as per the management plan |
| 1. Complete horticultural produce storage | 1. Cool chains are maintained based on equipment maintenance manual and product type 2. Horticultural produce storage is documented as per the Stores management policy. 3. Stores reports are shared in accordance with the stores management policy. 4. Horticultural waste is managed as per the environmental management policies and regulation. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Sources of food safety hazards may include but are not limited to: | * Site * Store * Produce * Packaging material |
| 1. Food safety hazards may include but are not limited to: | * Chemical * Biological * Physical |
| 1. Standards may include but are not limited to: | * General principles of hygiene. * Code of general hygienic practice for horticultural food industry. * Code of Practice for Horticulture |
| 1. Sources of materials may include but are not limited to: | * Storage containers * Post-harvest handling chemicals * Cleaning equipment * Trolleys * Fork lift * Conveyers * Storage facility |
| 1. Evaluation criteria may include but are not limited to: | * Prevalence * Probability * Severity |
| 1. Resources may include but are not limited to: | * Financial * Adequate trained personnel * Stationery * Computers * Printers * Projectors |
| 1. Preventive measures may include but are not limited to: | * Personnel hygiene * Rodent control * Bird control * Clean as you go * Preventive maintenance of equipment |
| 1. Corrective actions may include but are not limited to: | * Training and Re-training * Procedure change |
| 1. Food safety management plan development may include but are not limited to: | * Listing hazards * Identifying preventive measures and their control limits * Establishing monitoring procedures * Establishing corrective actions * Records to be kept * Checking and reviewing the plan |
| 1. Statutory requirements may include but are not limited to: | * EMC ACT * CROPS ACT * KEPHIS ACT * OSH ACT * STANDARDS ACT * FACTORIES ACT |
| 1. Horticultural produce may include but are not limited to: | * Indigenous and exotic leafy vegetables, * Cut flowers, * Root vegetables, * Fruits, * Nuts, * Herbs and spices. |
| Tools may include but are not limited to: | * Knives * Buckets * Bowls * Wheel barrows |
| 1. Materials and supplies may include but are not limited to: | * Water * Pallets * Horticultural produce * Power * Poly bags * Labels |
| 1. Equipment may include but are not limited to: | * Weighing scale * Trolleys * Cold storage equipment * Crates * First aid kit * Trays |
| 1. Horticultural storage facilities may include but are not limited to: | * Stores, * Shades * Cold rooms * Warehouse, |
| 1. Cost of storage may include but are not limited to: | * Rental costs for the storage facility, * Labour for handling produce, * Stores operation costs. |
| 1. Packed horticultural produce may include but are not limited to: | Produce placed in   * Crates * Boxes * Buckets |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Food safety assessment and communication
* Analytical
* Sampling
* Training
* Managerial
* Communication
* Digital literacy
* Observation
* Horticultural produce handling
* Driving
* Interpersonal
* Produce quality assessment
* Negotiation
* Report writing
* Numeracy
* Leadership
* Decision making

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Food safety management plan development
* Food safety in storage of horticultural produce
* Hazard identification
* Risk assessment
* First aid
* Hygiene
* Stores management.
* Food quality technology
* Types of storage tools, materials and equipment and their uses.
* Packaging materials
* Procurement procedures
* Occupational safety
* Food safety
* Environmental management
* Waste management
* Setting up storage facility
* Operation of storage tools and equipment
* Reporting channels
* Business management
* Produce market analysis
* Decision making

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Adhered to Safety and environmental requirements as per the EIA report and legal requirements 2. Managed the Setting up of a horticultural storage facility for the various produce 3. Managed safety among the workers through ensuring use of personal protective equipment and proper handling of tools, materials and equipment according to Good Agricultural Practices guide. 4. Managed the acquisition, sorting, cleaning and grading the horticultural produce in preparation for storage according to Good Agricultural Practices guide. 5. Managed the horticultural produce stores as per the stores management policy. 6. Maintained the documents of produce type, quality, cost, market demand 7. Maintained cold chains based on the produce type and quantity 8. Managed the environment protection as per the EMCA 1999 9. Observed food safety requirements in storage of horticultural produce 10. Documented and maintained food safety records in storage of produce |
| 1. Resource Implications | The following resources must be provided:   1. Assessment location 2. Tools, materials and equipment inventory records. 3. Market assessment reports. 4. Environmental Management and Conservation Act (EMCA1999) 5. Required standards and regulations as pertains to the Codes of Practice for Horticulture 6. Occupational Safety and Health Act (OSHA 2007) 7. Food, drugs and chemical substance Act 1988 8. Environmental Impact Assessment Report |
| 1. Methods of Assessment | Competency may be assessed through:   1. Observation 2. Written tests 3. Oral questioning |
| 1. Context of Assessment | Competency may be assessed:   1. On the job 2. Off the job 3. Industrial attachment   Off the job assessment must be undertaken in a closely simulated workplace environment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. Attitude is assessed alongside storage of horticultural produce |

# PROCESS HORTICULTURAL FRUITS

**UNIT CODE:** HO/OS/HG/CR/02/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to process horticultural fruits. It involves carrying out food safety risk assessment, developing food safety management plan, implementing the food safety management plan when setting up horticultural fruit processing facility, assembling horticultural fruit processing tools, materials and equipment, acquiring the fruits, receiving, making various fruit products, managing waste, evaluating implementation of the food safety management plan and preparing the required fruit processing documentation

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up Workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Carry out food safety risk assessment for processing horticultural fruits | 1. Possible ***sources of food safety hazards*** *are* identified guided by the process flow diagram developed as per established ***standard*s** 2. The level of food safety risks is assessed and established as perthe previous use of the site and ***sources of materials*** 3. Risks are evaluated and characterized as per established ***evaluation******criteria*** |
| 1. Develop food safety management plan for processing horticultural fruits | * 1. ***Resources*** are collected as per the risks assessment   2. Management plan is developed based on the risk assessment   3. ***Preventive measures***are established as per identified risks   4. ***Corrective actions***are established as per identified risks   5. Standard operating procedures for preventing and mitigating food safety risks are developed based on the management plan   6. The management plan isevaluated as per the established standards   7. Approval of the developed plan is sought from the top management |
| 1. Implement the food safety management plan for processing horticultural fruits | 1. The management plan is adopted as per the laid down procedures 2. Communication of the plan is done to the entire team through the official channel 3. ***Resources***are availed as identified in the management plan 4. Practices and procedures for processing of horticultural fruits are carried out and documented as per the management plan |
| 1. Prepare to process horticultural fruits. | 1. Safety and environmental requirements are identified and   Environmental Impact Assessment (EIA) undertaken as per statutory requirements   1. Horticultural fruit processing unit set up as per the organization’s business plan. 2. Horticultural fruit for processing is acquired based on fruit availability, procurement policy and market demand. 3. Horticultural fruit processing ***tools, materials & supplies and equipment*** are assembled based on the fruit types and the products required. 4. Horticultural fruits for processing are weighed based on the market demand. |
| 1. Process the horticultural fruits | 1. Horticultural fruits are processed to various ***Fruit products*** based on the market demand reports. 2. Fruit products are packaged based on product type and market demand reports |
| 1. Evaluate horticultural fruits processed. | 1. Quality of the fruit product is assessed based on public health policies and regulations 2. The ***cost of the fruit product*** is evaluated based on management accounting principles |
| 1. Evaluate implementation of the food safety management plan for processing horticultural fruits | 1. Internal verification of the plan is carried out as per the management plan and ***statutory requirements*** 2. The implementation is assessed for its effectiveness and measures put in place for improvement as per the management plan |
| 1. Complete horticultural fruit processing. | 1. Packed product is stored based on the stores management policy. 2. Horticultural fruit processing waste is managed as per the environmental management policies and regulation and the organization waste management policy. 3. Horticultural fruit processing records are prepared and shared as per the organization’s policy. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Sources of food safety hazards may include but are not limited to: | * Water * Chemical * Chemical residues * Location * Site * Store * Processing facility * Personnel * Packaging material |
| 1. Sources of materials may include but are not limited to: | * Processing containers * Chemicals * Cleaning equipment * Processing equipment * Trolleys * Fork lift * Conveyers * Storage facility |
| 1. Preventive measures may include but are not limited to: | * Personnel hygiene * Rodent control * Bird control * Clean as you go * Preventive maintenance of equipment |
| 1. Corrective actions may include but are not limited to: | * Re-training * Procedure change |
| 1. Evaluation criteria may include but are not limited to: | * Prevalence * Probability * Severity |
| 1. Resources may include but are not limited to: | * Financial * Adequate trained personnel * Stationery * Computers * Printers * Projectors |
| 1. Food safety management plan may include but are not limited to: | * Listing hazards * Identifying preventive measures and their control limits * Establishing monitoring procedures * Establishing corrective actions * Records to be kept * Checking and reviewing the plan |
| 1. Statutory requirements may include but are not limited to: | * EMC ACT * CROPS ACT * KEPHIS ACT * OSH ACT * STANDARDS ACT * FACTORIES ACT |
| 1. Fruit products may include but are not limited to: | All processed horticultural fruits products   * Fruit powders * Jellies * Jams * Fruit puree * Fruit sauces * Slices * Fruit wines * Pastes * Marmalades * Juices |
| 1. Tools may include but are not limited to: | * Knives * Buckets * Sieves/ strains * Spoons * Sauce pans * Bowls * Measuring jars * Cups * Plates * Basins |
| 1. Materials and supplies may include but are not limited to: | * Packaging materials * Power * Raw materials * Preservatives * Labels * Wax * Water * Seals * Stationeries * Packing tapes |
| 1. Equipment may include but are not limited to: | * Weighing scales * Sealers * Strapping machine * Trolleys * Boilers * Thermometers * Working benches * Crates * Trays * Packaging equipment * Fire-fighting equipment * First aid kits * Metal detectors * pH meters * Refractometers * Blenders * Juice extractors |
| 1. Cost of the fruit product may include but are not limited to: | All costs related to the production of the fruit products:   * Fixed costs * Variable costs |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Analytical
* Sampling
* Training
* Managerial
* Basic hygiene
* Record keeping
* Communication
* Processing machine and equipment operation
* Processing
* Digital literacy
* Observation
* Horticultural fruit products handling
* Driving
* Operating cold rooms

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Food safety management plan development
* Hazard identification
* Risk assessment
* Good Manufacturing Practices (GMP)
* First aid
* Hygiene
* Food processing management and science
* Food quality technology
* Types of horticultural processing methods
* Types of processing tools, materials and equipment
* Procurement procedures
* Horticultural fruit processing terminologies
* Occupational safety, food safety and health procedures
* Food processing regulations and standards
* Waste management and environmental management policies
* Construction procedures of processing units
* Packaging fruit products
* Reporting channels
* Decision making
* Produce market analysis

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Adhered to Safety and environmental requirements as per the EIA report and the law 2. Managed the setting up of horticultural fruit processing facility as per the strategic plans 3. Observed safety through use of personal protective equipment and proper handling of tools and equipment and working environment. 4. Managed the assembling of fruit processing tools, materials and equipment in the processing unit 5. Managed the processing and packaging the fruit products as per the set processing guidelines. 6. Observed hygiene through maintaining cleanliness of the tools, equipment and working surfaces as well as personal hygiene. 7. Provided documents of products, processing, production cost, market survey and stores management 8. Was efficient in the use of materials provided for processing. 9. Managed the environment protection as per the EMCA 1999 10. Observed food safety requirements in processing of horticultural fruits 11. Documented and maintained food safety records in setting up horticultural nursery |
| 1. Resource Implications | The following resources must be provided:   1. Assessment location 2. Tools, materials and equipment used in processing horticultural fruits. 3. Market assessment reports. 4. 2.4Environmental Management and Coordination Act (EMCA1999) 5. Occupational Safety and Health Act (OSHA 2007) 6. Food, drugs and chemical substance Act 1988 7. Environmental Impact Assessment Report 8. Required standards and regulations as pertains to the Codes of Practice for Horticulture |
| 1. Methods of Assessment | Competency may be assessed through:   1. Observation 2. Written tests 3. Oral questioning |
| 1. Context of Assessment | Competency may be assessed:   1. On the job 2. Off the job 3. Industrial attachment   Off the job assessment must be undertaken in a closely simulated workplace environment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. Attitude is assessed alongside fruit processing |

# PROCESS HORTICULTURAL VEGETABLES

**UNIT CODE:** HO/OS/HG/CR/03/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to process horticultural vegetables. It involves carrying out food safety risk assessment, developing food safety management plan, implementing the food safety management plan when setting up horticultural vegetable processing unit, acquiring the vegetables for processing, receiving vegetables for processing, assembling vegetable processing tools, materials and equipment, making various vegetable products, managing waste, evaluating implementation of the food safety management plan and preparing the required vegetable processing documentation

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Carry out food safety risk assessment for processing horticultural vegetables | 1. Possible ***sources of food safety hazards*** *are* identified guided by the process flow diagram developed as per established ***standard*s** 2. The level of food safety risks is assessed and established as perthe previous use of the site and ***sources of materials*** 3. Risks are evaluated and characterized as per established ***evaluation******criteria*** |
| 1. Develop food safety management plan for processing horticultural vegetables | * 1. ***Resources*** are collected as per the risks assessment   2. Management plan is developed based on the risk assessment.   3. ***Preventive measures***are established as per identified risks.   4. ***Corrective actions***are established as per identified risks.   5. Standard operating procedures for preventing and mitigating food safety risks are developed based on the ***food safety management plan.***   6. The management plan isevaluated as per the established standards.   7. Approval of the developed plan is sought from the top management |
| 1. Implement the food safety management plan for processing horticultural vegetables | 1. The management plan is adopted as per the laid down procedures. 2. Communication of the plan is done to the entire team through the official channel 3. ***Resources***are availed as identified in the management plan 4. Practices and procedures for processing horticultural vegetables are carried out and documented as per the management plan. |
| 1. Prepare to process horticultural vegetables. | 1. Safety and environmental requirements are identified and   Environmental Impact Assessment (EIA) undertaken as per statutory requirements   1. ***Horticultural vegetables*** processing unit set up as per the organization’s business plan. 2. Horticultural vegetables for processing are acquired based on seasonality, procurement policy and market demand. 3. Horticultural vegetable processing ***tools, materials & supplies and equipment*** are assembled based on the vegetable types and the products required. 4. The working surface is set for processing vegetables based on the type of vegetable type and quantities. 5. Horticultural vegetables are assembled, sorted, cleaned and graded based on the produce type and market demand   4.7 The vegetables for processing is weighed and recorded |
| 1. Process the horticultural vegetables | 1. Horticultural vegetables are processed to various products based on the market demand reports. 2. ***Processed Vegetables products*** are weighed and packaged based on product type and market demand reports. |
| 1. Evaluate processed horticultural vegetables products | 1. Quality of vegetable product is assessed based on public health regulations and type of the produce. 2. The ***cost of the vegetable product*** is evaluated based on management accounting principles |
| 1. Evaluate   implementation of the food safety management plan for processing horticultural vegetables | 1. Internal verification of the plan is carried out as per the management plan and ***statutory requirements*** 2. The implementation is assessed for its effectiveness and measures put in place for improvement as per the management plan |
| 1. Complete horticultural vegetable processing. | 1. Packed product is stored based on the stores management policy. 2. Horticultural vegetable processing waste is managed as per the environmental management policies and regulation and the organization waste management policy. 3. Horticultural vegetable processing records are maintained as per the organization’s policy. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Sources of food safety hazards may include but are not limited to: | * Water * Chemical * Site * Storage |
| 1. Sources of materials may include but are not limited to: | * Storage containers * Chemical * Cleaning equipment * Trolleys * Fork lift * Conveyers * Storage facility |
| 1. Preventive measures may include but are not limited to: | * Personnel hygiene * Rodent control * Bird control * Clean as you go * Preventive maintenance of equipment |
| 1. Corrective actions may include but are not limited to: | * Training and re-training * Procedure change |
| 1. Evaluation criteria may include but are not limited to: | * Prevalence * Probability * Severity |
| 1. Resources may include but are not limited to: | * Financial * Adequate trained personnel * Stationery * Computers * Printers * Projectors |
| 1. Food safety management plan may include but are not limited to: | * Listing hazards * Identifying preventive measures and their control limits * Establishing monitoring procedures * Establishing corrective actions * Records to be kept * Checking and reviewing the plan |
| 1. Statutory requirements may include but are not limited to: | * EMC ACT * CROPS ACT * KEPHIS ACT * OSH ACT * STANDARDS ACT * FACTORIES ACT |
| 1. Horticultural vegetables may include but are not limited to: | * All cultivated vegetables * Leafy * roots |
| 1. Tools may include but are not limited to: | * Knives * Buckets * Spoons * Sauce pans * Bowls * Plates * Basins |
| 1. Materials and supplies may include but are not limited to: | * Packaging materials * Power * Vegetables for processing * Preservatives * Labels * Stationeries * Water * Seals |
| 1. Equipment may include but are not limited to: | * Weighing scales * Sealers * Strapping machine * Trolleys * Boilers * Thermometers * Working benches * Crates * Trays * Packaging equipment * Fire fighting equipment * First aid kits * Metal detectors * pH meters * Refractometers * Blenders * Juice extractors |
| 1. Processed Vegetable products may include but are not limited to: | * All processed horticultural fruits products * Leafy vegetable powders * Root slices * Vegetable juices * Crystals * Root vegetable flour |
| 1. Cost of the vegetable product may include but are not limited to: | * All costs related to the production of the vegetable products: * Fixed costs * Variable costs |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Analytical
* Sampling
* Training
* Managerial
* Communication
* Processing machine and equipment operation
* Processing
* Digital literacy
* Observation
* Packaging
* Labeling
* Horticultural vegetable products handling
* Driving
* Operating cold rooms

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Food safety management plan development
* Food safety in processing horticultural vegetables
* Hazard identification
* Risk assessment
* First aid
* Hygiene
* Food processing management and science
* Food quality technology
* Types of horticultural processing methods
* Types of processing tools, materials and equipment
* Procurement procedures
* Horticultural vegetable processing terminologies
* Occupational safety, food safety and health procedures
* Food processing regulations and standards
* Waste management and environmental management policies
* Construction procedures of processing facilities • Packaging fruit products
* Record keeping.
* Stores management.
* Reporting
* Decision making
* Produce market analysis

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Adhered to Safety and environmental requirements as per the EIA report and the legal requirements. 2. Managed the setting up of horticultural vegetable processing facility for the various produce 3. Observed safety through use of personal protective equipment when handling tools and equipment as well as in working environment according to Good Agricultural Practices guide. 4. Managed the assembling of vegetable processing tools, materials and equipment in the processing unit according to Good Agricultural Practices 5. Processed and packaged the vegetable products as per the set processing guidelines. 6. Observed hygiene period through maintaining cleanliness of the tools, equipment and working surfaces as well as personal hygiene. 7. Was able to identity, use and maintains various vegetable processing tools and equipment. 8. Provided documents of products, processing, production cost, market survey and stores management 9. Managed the efficiency in the use of materials provided for processing. 10. Managed the environment protection as per the EMCA 1999 11. Observed food safety requirements in processing horticultural vegetables 12. Documented and maintained food safety records in processing vegetables |
| 1. Resource Implications | The following resources must be provided:   1. Assessment location 2. Tools, materials and equipment used in processing horticultural fruits. 3. Market assessment reports. 4. Environmental Management and Conservation Act (EMCA1999) 5. Occupational Safety and Health Act (OSHA 2007) 6. Food, drugs and chemical substance Act 1988 7. Public health act 8. Environmental Impact Assessment Report 9. Required standards and regulations as pertains to the Codes of Practice for Horticulture |
| 1. Methods of Assessment | Competency may be assessed through:   1. Observation 2. Written tests 3. Oral questioning |
| 1. Context of Assessment | Competency may be assessed:   1. On the job 2. Off the job 3. Industrial attachment   Off the job assessment must be undertaken in a closely simulated workplace environment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. Attitude is assessed alongside horticultural vegetable processing. |

# PROCESS HORTICULTURAL FLOWERS

**UNIT CODE:** HO/OS/HG/CR/04/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to process horticultural flowers. It involves setting up horticultural flower processing facility, assembling flower processing tools, materials and equipment, acquiring flowers for processing, sorting, grading and preservation as well as managing wastes and preparing the required horticultural flower processing documentation.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Prepare to process horticultural flowers. | 1. Safety and environmental requirements are identified and   Environmental Impact Assessment (EIA) undertaken as per statutory requirements   1. ***Horticultural flowers*** processing unit set up as per the organization’s business plan. 2. Horticultural flower processing ***tools, materials & supplies and equipment*** is assembled in the processing room as per the flower type and quantities. 3. Horticultural flowers for processing is acquired based on seasonality, procurement policy and market demand. 4. Horticultural flowers processing tools, materials and equipment are assembled based on the flower types and the final products required. 5. Horticultural flowers are pre-cooled based on flower and the season. 6. Quantity of horticultural flower for processing is recorded |
| 1. Process horticultural flowers | 1. Horticultural flowers are sorted based on flower type. 2. Horticultural flowers are graded based on bud size, number of leaves and stem sizes 3. ***Horticultural flowers products*** are preserved based on flower type, market demand. 4. Horticultural flower bouquets are made based on customer preferences. 5. Horticultural flowers are dried based on customer preference and the type of flowers. |
| 1. Evaluate horticultural flower processed. | 1. Quality of the flower product is assessed based on Good Agricultural Practices guidelines. 2. The cost of the flower product is evaluated based on management accounting principles |
| 1. Complete horticultural flower processing. | 1. The processed flower product is packed based on the flower product type and market demand 2. Packed flower product is labeled and addressed based on the customer destination 3. Packed product is stored based on the stores management policy. 4. Horticultural flower processing waste is managed as per the environmental management policies and regulation and the organization waste management policy. 5. Horticultural flower processing records are prepared and shared as per the organization’s policy. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

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| --- | --- |
| **Variable** | **Range** |
| 1. Horticultural flowers may include but are not limited to: | * All cut flowers |
| 1. Tools includes but not limited to: | * Knives * Buckets * Secateurs |
| 1. Materials and supplies may include but are not limited to: | * Packaging materials * Power * Flowers for processing * Preservatives * Labels * Stationeries * Water * Straps * Hangers * Litter bins |
| 1. Equipment may include but are not limited to: | * Strapping machine * Trolleys * Thermometers * Working benches * Trays * Packaging equipment * Firefighting equipment * First aid kits * Driers |
| 1. Horticultural flowers products may include but are not limited to: | All processed horticultural flower products   * Bouquet * Dried flowers |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Communication
* Flower processing machine and equipment operation
* Marketing
* Digital literacy
* Packaging
* Observation
* Interpersonal
* Decision making
* Horticultural flower handling
* Driving
* Operating cold rooms
* Supervisory

**Required knowledge**

The individual needs to demonstrate knowledge of:

* First aid
* Hygiene
* Horticultural flower processing methods
* Flower processing tools, materials and equipment
* Procurement procedures
* Horticultural flower processing terminologies
* Occupational safety,
* Flower processing regulations and standards
* Waste management
* Setting up processing facility
* Operating machines and equipment
* Types of packaging materials
* Stores management
* Records keeping
* Reporting channels
* Decision making
* Produce market analysis
* Basic accounting

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| Critical aspects of Competency | Assessment requires evidence that the candidate:   1. Adhered to Safety and environmental requirements as per the EIA report 2. Managed the setting up of a horticultural flowers processing facility for the various flower products. 3. Observed safety through use of personal protective equipment when handling tools and equipment as well as in working environment according to Good Agricultural Practices guide. 4. Managed the assembling flower processing tools, materials and equipment in the processing unit as per the Good Agricultural Practices 5. Managed the processing and packaging the vegetable products as per the set processing guidelines. 6. Maintained documents of products, processing, production cost, market survey and stores management 7. Managed the efficiency in used materials provided for processing. 8. Managed the environment protection as per the EMCA 1999 |
| Resource Implications | The following resources must be provided:   1. Assessment location 2. Tools, materials and equipment used in processing horticultural fruits. 3. Good Agriculture Practices guidelines 4. Food handling policies and procedures 5. Procurement policy 6. Environmental Impact Assessment Report |
| Methods of  Assessment | Competency may be assessed through:   1. Observation 2. Written tests 3. Oral questioning |
| Context of  Assessment | Competency may be assessed:   1. On the job 2. Off the job 3. Industrial attachment   Off the job assessment must be undertaken in a closely simulated workplace environment |
| Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. Attitude is assessed alongside flower processing. |

# PROCESS HORTICULTURAL NUTS

**UNIT CODE:** HO/OS/HG/CR/05/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to process horticultural nuts. It involves setting up horticultural nut processing facility, carrying out food safety risk assessment, developing food safety management plan, implementing the food safety management plan, assembling nut processing tools, materials and equipment, acquiring nuts for processing, receiving, sorting, grading and processing, managing waste, evaluating implementation of the food safety management plan and preparing the required nut processing documentation.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Carry out food safety risk assessment for processing horticultural nuts | 1. Possible ***sources of food safety hazards*** *are* identified guided by the process flow diagram developed as per established ***standard*s** 2. Risks identified are assessed as perthe management plan and ***source of materials*** 3. Risks are evaluated and characterized as per established ***evaluation criteria*** |
| 1. Develop food safety management plan for processing horticultural nuts | * 1. ***Resources*** are collected as per the risk assessment   2. Management plan is developed based on the risk assessment.   3. ***Preventive measures***are established as per identified risks.   4. ***Corrective actions***are established as per identified risks.   5. Standard operating procedures for preventing and mitigating food safety risks are developed based on the management plan.   6. The management plan isevaluated as per the established standards   7. Approval of the developed plan is sought from the top management |
| 1. Implement the food safety management plan for processing horticultural nuts | 1. The management plan is adopted as per the laid down procedures 2. Communication of the plan is done to the entire team through the official channel 3. ***Resources***are availed as identified in the management plan 4. Practices and procedures for processing horticultural nuts are carried out and documented as per the management plan |
| 1. Prepare to process horticultural nuts. | 1. Safety and environmental requirements are identified and   Environmental Impact Assessment (EIA) undertaken as per statutory requirements   1. ***Horticultural nut*** processing unit set up as per the organization’s business plan and the design. 2. Horticultural nuts for processing are acquired based on procurement policy and market demand. 3. Horticultural nut processing ***tools, materials & supplies and equipment*** are assembled based on the nut types, amount and the final products required. 4. Horticultural nuts are sorted based on nut type and market demand. 5. Horticultural nuts for processing are weighed and recorded based on quantities required for processing. |
| 1. Process the horticultural nuts | 1. Horticultural nuts are processed into various ***horticultural nut products*** based on market demand and nut type. 2. Horticultural nut products are packaged and labeled based on market demand. |
| 1. Evaluate processed horticultural nut products. | 1. Quality of the horticultural nut product is assessed based on public act regulations, type of nuts as well as market demand. 2. The cost of the nut product is evaluated based on management accounting principles |
| 1. Evaluate implementation of the food safety management plan for processing horticultural nuts | 1. Internal verification of the plan is carried out as per the management plan and ***statutory requirements*** 2. The implementation is assessed for its effectiveness and measures put in place for improvement as per the management plan |
| 1. Complete horticultural nut processing. | 1. Packaged horticultural nut product is packed based on the market demand and stores management policies. 2. Packed product is stored based on the stores management policy. 3. Horticultural nut processing by-products and waste is managed as per the organization waste and by-product management policy. 4. Horticultural nut processing records are prepared and shared as per the organization’s policy. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Sources of food safety hazards may include but are not limited to: | * Water * Chemical * Chemical residues * Afflatoxin * Sites * Store |
| 1. Sources of materials may include but are not limited to: | * Storage containers * Chemical * Cleaning equipment * Trolleys * Fork lift * Conveyers * Storage facility |
| 1. Preventive measures may include but are not limited to: | * Personnel hygiene * Rodent control * Bird control * Clean as you go * Preventive maintenance of equipment |
| 1. Corrective actions may include but are not limited to: | * Re-training * Procedure change |
| 1. Evaluation criteria   may include but are not limited to: | * Prevalence * Probability * Severity |
| 1. Resources may include but are not limited to: | * Financial * Adequate trained personnel * Stationery * Computers * Printers * Projectors |
| 1. Statutory requirements may include but are not limited to: | * PCPB ACT (list of registered products) * EMC ACT * CROPS ACT * KEPHIS ACT * STANDARDS ACT * FACTORIES ACT |
| 1. Horticultural nut may include but are not limited to: | * Ground nut * Macadamia * Cashew |
| 1. Tools may include but are not limited to: | * Knives * Buckets * Spoons * Sauce pans * Drying mats * Bowls * Plates * Basins |
| 1. Materials and supplies may include but are not limited to: | * Packaging materials * Power * Heat * Nuts for processing * Preservatives * Labels * Stationeries * Water * Litter bins * Poly bags * Salt |
| 1. Equipment may include but are not limited to: | * Strapping machine * Trolleys * Thermometers * Working benches * Trays * Packaging equipment * Fire-fighting equipment |
|  | * First aid kits * Driers * Milling machine |
| 1. Horticultural nut products may include but are not limited to: | All processed horticultural nut products   * Fried * Baked * Powder * Nut pastes * Seasoned nuts * Nut oil * Roasted |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Analytical
* Sampling
* Training
* Managerial
* Communication
* Processing machine and equipment operation
* Processing
* Marketing
* Digital literacy
* Observation
* Driving
* Packaging
* Negotiation
* Interpersonal
* Operating cold rooms

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Food safety management plan development
* Food safety in processing horticultural nuts
* Hazard identification
* Risk assessment
* Mycotoxins in nut production
* Good manufacturing practices (GMP)
* First aid
* Hygiene
* Food processing management and science
* Food quality technology
* Horticultural nut processing methods
* Types of nut processing tools, materials and equipment
* Procurement procedures
* Horticultural nut processing terminologies
* Occupational safety,
* Food safety
* Food processing regulations and standards
* Legal processes (certification/licensing requirements for processing)
* By-products and waste management
* Business management
* Setting up horticultural nut processing units
* Produce packaging
* Stores management.
* Report writing
* Decision making
* Produce market analysis

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Adhered to Safety and environmental requirements as per the EIA report 2. Managed the setting up of a horticultural nuts processing facility for the various nuts 3. Observed safety through use of personal protective equipment when handling tools and equipment as well as in working environment according to Good Agricultural Practices guide. 4. Managed the assembling of nut processing tools, materials and equipment in the processing unit as per the Good Agricultural Practices 5. Acquired, sorted and graded nuts for processing. 6. Managed the Processing and packaging of the horticultural nuts as per the market demand and nut type. 7. Observed hygiene during the assessment period through maintaining cleanliness of the tools, equipment and working surfaces as well as personal hygiene. 8. Maintained documents of products, processing, production cost, market survey and stores management 9. Managed the efficiency in the use of materials provided for processing. 10. Managed the environment protection as per the EMCA 1999 11. Observed food safety requirements in processing of horticultural nuts 12. Documented and maintained food safety records in processing horticultural nuts |
| 1. Resource Implications | The following resources must be provided:   1. Assessment location 2. Tools, materials and equipment used in processing horticultural nuts. 3. Market assessment reports. 4. Environmental Management and Coordination Act (EMCA1999) 5. Occupational Safety and Health Act (OSHA 2007) 6. Food , drugs and chemical substance Act 1988 7. Environmental Impact Assessment Report 8. 2.8 Required standards and regulations as pertains to the Codes of Practice for Horticulture |
| 1. Methods of Assessment | Competency may be assessed through:   1. Observation 2. Written tests 3. Oral questioning |
| 1. Context of Assessment | Competency may be assessed:   1. On the job 2. Off the job 3. Industrial attachment   Off the job assessment must be undertaken in a closely simulated workplace environment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. Attitude is assessed alongside Horticultural nut processing |

# PROCESS HORTICULTURAL HERBS AND SPICES

**UNIT CODE: HO/OS/HG/CR/06/6/B**

**UNIT DESCRIPTION**

This unit specifies the competencies required to process horticultural herbs and spices. It involves carrying out food safety risk assessment, developing food safety management plan, implementing the food safety management plan when setting up horticultural herbs and spices processing facilities, assembling herbs and spices processing tools, materials and equipment, acquiring, receiving, sorting, grading and processing the herbs and spices to various products, managing waste, evaluating implementation of the food safety management plan and preparing the required documentation.

**ELEMENTS AND PERFORMANCE CRITERIA**

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| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Carry out food safety risk assessment for processing horticultural herbs and spices | 1. Possible ***sources of food safety hazards*** *are* identified guided by the process flow diagram developed as per established ***standard*s** 2. Risks identified are assessed as perthe management plan and ***source of materials*** 3. Risks are evaluated and characterized as per established ***evaluation criteria*** |
| 1. Develop food safety management plan for processing horticultural herbs and spices | * 1. ***Resources*** are collected as per the risk assessment   2. Management plan is developed based on the risk assessment.   3. ***Preventive measures***are established as per identified risks.   4. ***Corrective actions***are established as per identified risks.   5. Standard operating procedures for preventing and mitigating food safety risks are developed based on the management plan.   6. The management plan is evaluated as per the established standards   7. Approval of the developed plan is sought from the top management |
| 1. Implement the food safety management plan for processing horticultural herbs and spices | 1. The management plan is adopted as per the laid down procedures 2. Communication of the plan is done to the entire team through the official channel 3. *Resources* are availed as identified in the management plan 4. Practices and procedures for processing horticultural herbs and spices are carried out and documented as per the management plan |
| 1. Prepare to process horticultural herbs and spices. | 1. Safety and environmental requirements are identified and 2. Environmental Impact Assessment (EIA) undertaken as per statutory requirements 3. ***Horticultural herbs and spices*** processing unit set up as per the organization’s business plan. 4. Horticultural herbs and spices for processing are acquired based on procurement policy and market demand. 5. Horticultural herbs and spices processing ***tools, materials &supplies and equipment*** are assembled based on their types, amount and the final products required. 6. Horticultural herbs and spices are sorted based on herb type. |
| 1. Process the horticultural herbs and spices | 1. Horticultural spices are processed into various ***horticultural spices products*** based on market demand 2. Horticultural herbs are processed into various ***horticultural herb products*** based on market demand |
| 1. Evaluate quality of the horticultural herbs and spices products. | 1. Quality of the horticultural herbs and spices product is assessed based on public health act regulations as well as market demand. 2. The cost of the herbs and spices product is evaluated based on management accounting principles |
| 1. Evaluate implementation of the food safety management plan for processing horticultural herbs and spices | 1. Internal verification of the plan is carried out as per the management plan and ***statutory requirements*** 2. The implementation is assessed for its effectiveness and measures put in place for improvement as per the management plan |
| 1. Complete horticultural herbs and spices processing. | 1. Packaged horticultural herbs and spices product is packed and stored based on the market demand and stores management policies. 2. Horticultural herbs and spices processing waste is disposed off as per the environmental management policies and regulation and the organization waste and by-product management policy. 3. Horticultural herbs and spices processing records are prepared and shared as per the organization’s policy. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Sources of food safety hazards may include but are not limited to: | * Water * Chemical * Chemical residues * Microbial * Sites |
| 1. Sources of materials may include but are not limited to: | * Storage containers * Chemical * Cleaning equipment * Trolleys * Fork lift * Conveyers * Storage facility |
| 1. Preventive measures may include but are not limited to: | * Personnel hygiene * Rodent control * Bird control * Clean as you go * Preventive maintenance of equipment |
| 1. Corrective actions may include but are not limited to: | * Re-training * Procedure change |
| 1. Evaluation criteria   may include but are not limited to: | * Prevalence * Probability * Severity |
| 1. Resources may include but are not limited to: | * Financial * Adequate trained personnel * Stationery * Computers * Printers * Projectors |
| 1. Statutory requirements may include but are not limited to: | * PCPB ACT (list of registered products) * EMC ACT * CROPS ACT * KEPHIS ACT * STANDARDS ACT * FACTORIES ACT |
| 1. Horticultural herbs and spices may include but are not limited to: | * Onions * Sage * Rosemary * Thymes * Aloe Vera * Ginger * Cinnamon * Coriander * Parsley * Ginger * Dill * Chives * Mint * Garlic |
| 1. Horticultural spices products may include but are not limited to: | All processed horticultural spices products:   * Powders * Condiments |
| 1. Tools may include but are not limited to: | * Knives * Buckets * Spoons * Sauce pans * Bowls * Plates * Mortars and pestles * Basins |
| 1. Materials & supplies may include but are not limited to: | * Packaging materials * Power source * Herbs and spices for processing * Preservatives * Labels * Driers * Salts * Heat source * Stationeries * Water source * Seals |
| 1. Equipment includes but not limited to: | * Weighing scales * Sealers * Strapping machine * Trolleys * Boilers * Thermometers * Working benches * Crates * Trays * Packaging equipment * Fire fighting equipment * First aid kits |
| 1. Horticultural herbs products includes but not limited to: | All processed horticultural herbs products:   * Soaps * Pesticides * Repellents |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Analytical
* Sampling
* Training
* Managerial
* Communication
* Processing machine and equipment operation
* Processing
* Marketing
* Digital literacy
* Observation
* Driving
* Interpersonal
* Decision making
* Packaging
* Operating cold rooms

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Food safety management plan development
* Food safety in processing of horticultural herbs and spices
* Hazard identification
* Risk assessment
* Mycotoxins in processing of herbs
* Good manufacturing practices (GMP)
* First aid
* Hygiene
* Food processing management and science
* Food quality technology
* Horticultural herbs and spices processing methods
* Types of herbs and spices processing tools, materials and equipment
* Procurement procedures
* Horticultural herbs and spices processing terminologies
* Occupational safety,
* food safety
* Food processing regulations and standards
* Legal processes (certification/licensing requirements for processing)
* Waste management
* Setting up horticultural herbs and spices processing units
* Packaging
* Decision making
* Business management
* Report writing • Stores management.

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Adhered to Safety and environmental requirements as per the EIA report 2. Managed the setting up of a horticultural herbs and spices processing facility for the various herbs and spices. 3. Observed safety through use of personal protective equipment and proper handling of tools and equipment and working environment. 4. Managed the assembling of herbs and spices processing tools, materials and equipment in the processing unit 5. Acquired, sorted and graded herbs and/or spices for processing. 6. Managed the processing the horticultural herbs and spices as per the market demand and herbs or spices type. 7. Observed hygiene through maintaining cleanliness of the tools, equipment and working surfaces as well as personal hygiene. 8. Managed the environment protection as per the EMCA 1999 9. Maintained documents of products, processing, production cost, market survey and stores management 10. Efficiently used materials provided for processing. 11. Observed food safety requirement in processing of horticultural herbs and spices 12. Documented and maintained food safety records in processing of herbs and prices |
| 1. Resource Implications | The following resources must be provided:   1. Assessment location 2. Tools, materials and equipment used in processing horticultural herbs and spices. 3. Market assessment reports. 4. Food handling policy guides and regulations 5. Public health act 6. Environmental Impact Assessment Report 7. Required standards and regulations as pertains to the Codes of Practice for Horticulture |
| 1. Methods of Assessment | Competency may be assessed through:   1. Observation 2. Written tests 3. Oral questioning |
| 1. Context of Assessment | Competency may be assessed:   1. On the job 2. Off the job 3. Industrial attachment   Off the job assessment must be undertaken in a closely simulated workplace environment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. Attitude is assessed alongside herbs and spices processing. |

# SUPERVISE HORTICULTURAL PRODUCE PROCESSING UNIT OPERATIONS

**UNIT CODE: HO/OS/HG/CR/07/6/B**

**UNIT DESCRIPTION**

This unit specifies the competencies required to oversee Horticultural Processing unit operations. It involves carrying out food safety risk assessment, developing food safety management plan, implementing the food safety management plan when preparing the processing unit annual plan, allocating resources to unit departments, monitoring performance, appraising staff, evaluating implementation of the food safety management plan and preparing the processing unit documentation.

**ELEMENTS AND PERFORMANCE CRITERIA**

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| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Carry out food safety risk assessment for operations of the horticultural produce processing unit | 1. Possible ***sources of food safety hazards*** *are* identified guided by the process flow diagram developed as per established ***standard*s** 2. Risks identified are assessed as perthe management plan and ***source of materials*** 3. Risks are evaluated and characterized as per established ***evaluation criteria*** |
| 1. Develop food safety management plan for operations of the horticultural produce processing unit | * 1. ***Resources*** are collected as per the risks assessment report   2. ***Food safety management plan is developed*** based on the risk assessment report   3. ***Preventive measures***are established as per identified risks   4. ***Corrective actions***are established as per identified risks   5. Standard operating procedures for preventing and mitigating food safety risks are developed based on the management plan.   6. The management plan is evaluated as per the established standards   7. Approval of the developed plan is sought from the top management |
| 1. Implement the food safety management plan for operations of the horticultural produce processing unit | 1. The management plan is adopted as per the laid down procedures 2. Communication of the plan is done to the entire team through the official channel 3. ***Resources***are availed as identified in the management plan 4. Practices and procedures for horticultural produce processing unit are carried out and documented as per the management plan. |
| 1. Prepare to supervise Horticultural processing unit operations. | 1. ***Annual plan*** is prepared as per the Strategic Plan 2. ***Resources*** required are allocated in accordance with Strategic Plan and Standard Operations Procedures 3. Processing unit evaluation plan is developed in accordance with the strategic plan 4. Identify and assemble the required ***tools, materials and supplies*** |
| 1. Supervise Horticultural processing unit operations | 1. Horticultural processing unit supervisory functions are carried out in accordance with the annual Plan 2. Resources are utilized according to the annual plan |
| 1. Evaluate supervision of Horticultural processing unit | 1. Monitoring and evaluation of the unit operations is undertaken according to annual plan and the Standard Operating Procedures 2. Staff appraisal is undertaken in accordance with Standard Operating Procedures |
| 1. Evaluate implementation of the food safety management plan for the operations of the horticultural produce processing unit | 1. Internal verification of the plan is carried out as per the management plan and ***statutory requirements*** 2. The implementation is assessed for its effectiveness and measures put in place for improvement as per the management plan |
| 1. Complete supervision of Horticultural processing unit | 1. Supervisory report is prepared based on annual Plan 2. Supervisory report is shared with relevant partners in accordance with Standard Operating Procedures 3. Horticultural processing unit maintenance is carried out in accordance with the maintenance schedule. |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Sources of food safety hazards may include but are not limited to: | * Water * Chemical * Site * Store * Organic and inorganic fertilizers * Agrochemicals * Post-harvest treatments |
| 1. Sources of materials may include but are not limited to: | * Storage containers * Chemical * Cleaning equipment * Trolleys * Fork lift * Conveyers * Storage facility |
| 1. Evaluation criteria may include but are not limited to: | * Prevalence * Probability * Severity |
| 1. Resources may include but are not limited to: | * Financial * Adequate trained personnel * Stationery * Computers * Printers * Projectors |
| 1. Food safety management plan may include but are not limited to: | * Listing hazards * Identifying preventive measures and their control limits * Establishing monitoring procedures * Establishing corrective actions * Records to be kept * Checking and reviewing the plan |
| 1. Statutory requirements may include but are not limited to: | * PCPB ACT (list of registered products) * EMC ACT * CROPS ACT * KEPHIS ACT * OSH ACT |
| 1. Annual plan may include but are not limited to: | The specific plans derived from the strategic plans that are implemented on annual basis.   * Financial plan. * Activity plan * Human resource management plans |
| 1. Resources may include but are not limited to: | Assets that are transformed to produce benefit and in the process may be consumed or made unavailable   * Materials * Energy * Services * Staff * Knowledgee |
| 1. Tools may include but are not limited to: | * Staff appraisal guides * Work plans * Monitoring and evaluation templates * Performance contracts * Performance appraisal systems |
| 1. Materials & supplies may include but are not limited to: | * Stationeries * Human resources manuals * Management documents |
| 1. Equipment may include but are not limited to: | * ICT * Fire-fighting equipment * First aid kits |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Analytical
* Sampling
* Training
* Supervisory
* Public Communication
* Negotiation
* Digital literacy
* Planning
* Organizing
* Technical report writing
* Staff recruitment
* Motivating
* Controlling
* Coordination
* Problem solving
* Critical thinking
* Decision making
* Persuasion
* Resources management
* Systems and processes Analysis
* Systems and processed Evaluation

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Food safety management plan development
* Food safety in horticultural produce processing unit operations
* Hazard identification
* Risk assessment
* Temperature and humidity control
* Good manufacturing practices (GMP)
* Traceability
* Standards for additives
* Strategic planning
* Business management function
* Policy formulation.
* Machines and tools, including their designs, uses, repair, and maintenance.
* Building and Construction
* Human resources management
* Laws, legal codes, court procedures, precedents, government regulations, executive orders, agency rules
* Public Safety and Security
* Sales and Marketing • Basic accounting
* Critical thinking.

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Managed the preparation of Plans (strategic plan, annual, quarterly and monthly). 2. Managed the utilization of resources in accordance with the annual plan 3. Managed human resources in the unit. 4. Developed a processing unit evaluation plans 5. Prepared and shared relevant reports as per the organization report sharing policy 6. Manage the environment protection as required by the EMCA 1999. 7. Observed food safety requirements in horticultural produce processing unit operations 8. Documented and maintained food safety records in processing unit operations |
| 1. Resource Implications | The following resources must be provided:   1. Horticultural processing unit strategic plan 2. Assessment location 3. Standard operation plan. 4. Staffing policies 5. Required standards and regulations as pertains to the Codes of Practice for Horticulture |
| 1. Methods of Assessment | Competency may be assessed through:   1. Observation 2. Written tests 3. Oral questioning 4. Assignments |
| 1. Context of Assessment | Competency may be assessed:   1. On-the- job 2. Off the job 3. Industrial attachment   Off the job assessment must be undertaken in a closely simulated workplace environment. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. Attitude is assessed alongside supervising horticultural processing practices. |

# MANAGE HORTICULTURAL PRODUCE PROCESSING UNIT

**UNIT CODE: HO/OS/HG/CR/08/6/B**

**UNIT DESCRIPTION**

This unit specifies the competencies required to manage Horticultural Processing unit. It involves preparing the organizations strategic plan, sourcing for resources to implement strategic plan, implementing the food safety management plan, evaluating implementation of the food safety management system, performing management roles, evaluating performances, maintaining documentation and advising the stakeholders.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Implementation of the food safety management plan for managing the horticultural produce processing unit | 1. The management plan is adopted as per the laid down procedures 2. Communication of the plan is done to the entire team through the official channel 3. ***Resources***are availed as identified in the management plan 4. Practices and procedures for managing the horticultural produce processing unit are carried out and documented as per the management plan |
| 1. Prepare to manage Horticultural processing unit. | 1. Business operating environment assessment is carried out for the processing unit. 2. Strategic Plan is prepared in accordance with the business operating environment assessment report 3. ***Annual plan*** is prepared as per the Strategic Plan 4. ***Resources*** required are sourced in accordance with Strategic Plan and Standard Operations Procedures. 5. Identified and used various management ***tools, materials and supplies.*** |
| 1. Manage horticultural processing unit | 1. ***Horticultural processing unit management functions*** are carried out in accordance with the Strategic Plan 2. ***Resources*** are allocated in accordance with the Annual plans |
| 1. Evaluate management of horticultural processing unit | 1. Monitoring and evaluation is undertaken according to Strategic Plan and the Standard Operating Procedures 2. Auditing of the business is carried out based on the strategic plan and accounting policy |
| 1. Evaluate of the implemented food safety management system for the horticultural produce processing unit | 1. Verification of the food safety management system is carried out as per the management plan and ***statutory requirements*** 2. The implementation is assessed for its effectiveness and measures put in place for improvement as per the management plan |
| 1. Documentation of horticultural produce processing unit is maintained | * 1. Provide resources required for ***documentation***   2. Training of the resource persons   3. Confirm accuracy of the documentation |
| 1. Complete management of horticultural processing unit | 1. Management report is prepared based on Strategic Plan 2. Management report is shared with relevant partners in accordance with Standard Operating Procedures |

**RANGE**

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Annual plan may include but are not limited to: | The specific plans derived from the strategic plans that are implemented on annual basis.   * Financial plan. * Activity plan * Human resource management plans |
| 1. Resources may include but are not limited to: | Assets that are transformed to produce benefit and in the process may be consumed or made unavailable   * Materials * Energy * Services * Staff * Knowledge |
| 1. Tools may include but are not limited to: | * Staff appraisal guides * Work plans * Monitoring and evaluation templates * Financial management tools * Human resources plans * Performance contracts * Performance appraisal systems |
| 1. Materials & supplies may include but are not limited to: | * Stationeries * Human resources policies * Financial management policies. * Management documents |
| 1. Equipment includes but not limited to: | * ICT * First aid kits |
| 1. Documentation may include but are not limited to: | * Policies * Procedures * Work instructions * Records |
| 1. Statutory requirements may include but are not limited to: | * PCPB ACT (list of registered products) * EMC ACT * CROPS ACT * KEPHIS ACT * OSH ACT * STANDARDS ACT |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

**Required skills**

The individual needs to demonstrate the following skills:

* Analytical
* Sampling
* Training
* Managerial
* Public Communication
* Negotiation
* Digital literacy
* Planning
* Organizing
* Technical report writing
* Staff recruitment
* Motivating
* Controlling
* Coordination
* Problem solving
* Critical thinking
* Decision making
* Persuasion
* Resources management
* Systems and processes Analysis
* Systems and processed Evaluation

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Food safety management plan development
* Food safety in storage of horticultural produce
* Hazard identification
* Risk assessment
* Traceability
* Additives
* Strategic planning
* Business management function
* Policy formulation.
* Machines and tools, including their designs, uses, repair, and maintenance.
* Building and Construction
* Human resources management
* Laws, legal codes, court procedures, precedents, government regulations, executive orders, agency rules
* Public Safety and Security
* Sales and Marketing • Basic accounting
* Critical thinking.

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

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| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Manage the preparation of a Strategic Plan and annual plans 2. Managed the allocation of resources to various used 3. Carried out management function. 4. Managed the development of a business evaluation plans 5. Prepared and shared relevant reports as per the organisation report sharing policy 6. Observed food safety requirements in horticultural produce processing unit operations 7. Documented and maintained food safety records in horticultural produce processing unit operations |
| 1. Resource Implications | The following resources must be provided:   1. Horticultural processing unit strategic plan 2. Standard Operations Procedures 3. Annual plans 4. Assessment location 5. Standard operation plans. 6. Staffing policies 7. Required standards and regulations as pertains to the Codes of Practice for Horticulture |
| 1. Methods of Assessment | Competency may be assessed through:   1. Observation 2. Written tests 3. Oral questioning 4. Assignments |
| 1. Context of Assessment | Competency may be assessed:   1. On-the- job 2. off the job 3. Industrial attachment   Off the job assessment must be undertaken in a closely simulated workplace environment. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended. Attitude is assessed alongside managing horticultural processing management practices. |