****

**REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARDS**

**FOR**

**AQUACULTURE TECHNICIAN**

**LEVEL 3**



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 blueprint, Vision 2030 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 to the Constitution of Kenya 2010 and this resulted to the formulation of the Policy Framework for Reforming Education and Training. A key feature of this policy is the radical change in the design and delivery of the TVET training. This policy document requires that training in TVET be competency based, curriculum development be industry led, certification be based on demonstration of competence and mode of delivery allows for multiple entry and exit in TVET programmes.

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

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

**PRINCIPAL SECRETARY**

**VOCATIONAL AND TECHNICAL TRAINING**

**MINISTRY OF EDUCATION**

# PREFACE

Kenya Vision 2030 aims to transform the country 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 education and training. TVET has a responsibility of facilitating the process of inculcating knowledge, skills and attitudes necessary for catapulting the nation 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 on Reforming Education and Training in Kenya, emphasized the need to reform curriculum development, assessment and certification. This called for a shift to CBET in order 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.

TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) in conjunction with Aquaculture Sector Skills Advisory Committee (SSAC), German International Cooperation and Ministry of Agriculture, Livestock and Fisheries have developed these Occupational Standards for an Aquaculture Technician. TVET CDACC in conjunction with Micro Enterprises Support Programme Trust (MESPT) have reviewed these Occupational Standards and incorporated Food Safety. These standards will be the bases for development of competency-based curriculum for Aquaculture Management level 3.

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

I am grateful to the Council Members, Council Secretariat, Aquaculture SSAC, expert workers and all those who participated in the development and review of these Occupational Standards.

**CHAIRPERSON**

**TVET CDACC**

# ACKNOWLEDGEMENT

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

I thank TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) for providing guidance on the development of these Standards. My gratitude goes to Aquaculture Sector Skills Advisory Committee (SSAC) members for their contribution to the development of these Standards. I thank all the individuals and organizations who participated in the validation of these Standards.

My gratitude also goes 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 Standards through the CAADP ATVET project.

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

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

I acknowledge all other institutions which in one way or another contributed to the development of these Standards.

**CHAIRPERSON**

**AQUACULTURE SECTOR SKILLS ADVISORY COMMITTEE**

# ABBREVIATIONS AND ACRONYMS

ATVET : Agricultural Technical and Vocational Education and Training

BC : Basic Competency

CAADP : Comprehensive Africa Agricultural Development Programme

CDACC : Curriculum Development, Assessment and Certification Council

CR : Core Competency

DANIDA Danish International Development Agency

GIZ : German International Cooperation

ICT : Information Communication Technology

MESPT Micro Enterprises Support Programme Trust

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

# KEY TO UNIT CODE

**AQ /OS /AT /BC /01/ 3/B**

Industry or sector

Occupational Standards

Occupational area

Type of competency

Competency number

Competency level

Version control

# OVERVIEW

Aquaculture Management level 3 qualification consists of competencies for preparation of selected pond sites, pond construction, producing both natural as well as on-farm formulated fish feeds. It also involves competencies for stocking the ponds and tank with fingerlings and raising them to market size under optimum conditions.

This qualification consists of the following basic and core competencies:

**BASIC UNITS OF COMPETENCY**

|  |  |
| --- | --- |
| AQ/OS/AT/BC/01/3/B | Demonstrate Communication Skills |
| AQ/OS/AT/BC/02/3/B | Demonstrate Numeracy Skills |
| AQ/OS/AT/BC/03/3/B | Demonstrate Digital Literacy |
| AQ/OS/AT/BC/04/3/B | Demonstrate Entrepreneurial Skills |
| AQ/OS/AT/BC/05/3/B | Demonstrate Employability Skills |
| AQ/OS/AT/BC/06/3/B | Demonstrate Environmental Literacy |
| AQ/OS/AT/BC/07/3/B | Demonstrate Occupational Safety and Health Standards |

**CORE UNITS OF COMPETENCIES**

|  |  |
| --- | --- |
| AQ/OS/AT/CR/01/3/B | Construct Fish Pond |
| AQ/OS/AT/CR/02/3/B | Produce Fish Feeds |
| AQ/OS/AT/CR/03/3/B | Support Fish Hatchery Operations |
| AQ/OS/AT/CR/04/3/B | Produce Grow Out Fish |
| AQ/OS/AT/CR/05/3/B | Handle Harvested Fish |
|  | Industrial Attachment |

# BASIC UNITS OF COMPETENCY

## DEMONSTRATE COMMUNICATION SKILLS

**UNIT CODE: AQ/OS/AT/BC/01/3/B**

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate communication skills. It involves obtaining and conveying workplace information, speaking English at a basic operational level, participating in workplace meetings and discussions, and completing relevant work-related documents.

**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. Obtain and convey workplace information | 1. Specific and relevant information is accessed from ***appropriate sources*** based on standard procedures 2. Effective questioning, active listening and speaking skills are used to gather and convey information based on communication needs 3. Appropriate ***medium*** is used to transfer information and ideas in accordance with workplace guidelines 4. Appropriate non- verbal communication is used as per the communication needs 5. Appropriate lines of communicationwith supervisors and colleagues are identified and followed based on workplace requirements 6. Location and storage of information is undertaken according to workplace procedures 7. Personal interaction is carried out clearly and concisely according to workplace requirements |
| 1. Speak English at a basic operational level | * 1. Participation in simple conversations with work colleagues is undertaken based on familiar topics   2. Simple verbal instructions and requests are responded to according to workplace guidelines   3. ***Routine procedures*** are provided in accordance with workplace policy   4. Likes, dislikes and preferences are expressed based on individual preference   5. Different forms of expression in English are identified in line with workplace requirements |
| 1. Participate in workplace meetings and discussions | * 1. Team meetings are attended on time according to schedules   2. Own opinions are clearly expressed and those of others are listened to in accordance with workplace guidelines   3. Meeting inputs are provided based on the meeting purpose and established ***protocols***   4. ***Workplace interactions*** are conducted as per organizations’ code of conduct   5. Work-related questions are asked and responded based on set protocols   6. Meetings outcomes are interpreted and implemented as per organizations’ objectives |
| 1. Complete relevant work-related documents | * 1. Range of forms relating to conditions of employment are completed according to workplace procedures   2. Workplace data is recorded based on workplace requirements   3. Errors in recording information are identified and acted upon in accordance with workplace policies   4. Reporting requirements are completed according to organizational guidelines |

**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. Appropriate Sources may include but not limited to: | * Various department heads, * organization documents |
| 1. Medium may include but not limited to: | * Method of communication * Physical media * Mechanical media |
| 1. Routine procedures may include but not limited to: | * Day to day activities |
| 1. Protocols may include but not limited to: | * Procedures for doing a task |
| 1. Workplace interactions may include but not limited to: | * Official inter relations |

**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
* Active Listening
* Communication
* writing
* Interpretation
* Basic Information Technology (IT)

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Minutes writing
* Report writing

**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. Prepared written communication following standard format of the organization 2. Accessed information using communication equipment 3. Spoken English at a basic operational level 4. Made use of relevant terms as an aid to transfer information effectively 5. Conveyed information effectively adopting the formal or informal communication |
| 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 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | * 1. Direct Observation   2. Interview   3. Written test |
| 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: AQ/OS/AT/BC/02/3/B**

**UNIT DESCRIPTION:**

This unit covers the competencies required to demonstrate numeracy skills. It involves using whole numbers and money up to one hundred thousand for work, Locating, comparing and using highly familiar measurement for work, using highly familiar maps and diagrams for work, identifying and using some common 2D shapes for work and locating specific information in highly familiar tables, graphs and charts for work

**Elements and Performance Criteria**

|  |  |
| --- | --- |
| **Element** | **Performance Criteria** |
| Elements describe the essential outcomes. | Performance criteria describe the performance needed to demonstrate achievement of the element.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Use whole numbers for work | 1. Whole numbers and money amount up to 100,000 in highly familiar workplace documents and tasks are named and read according to workplace procedures. 2. Understanding of place value and the role of zero is demonstrate according to standard operating procedures. 3. Halves are recognised and understood in workplace as per Standard operating procedures. 4. Whole numbers and money amounting up to 100,000 are organised in size order and are compared as per workplace procedures. 5. Counting is done in numbers as per standard operating procedures. 6. Addition and subtraction of whole numbers and money up to 100,000 done in accordance with workplace requirement 7. Links between operations of addition and subtraction are clearly described as per job requirement. 8. Reasonableness of outcome with prompting and support is checked as per work requirement. 9. Numerical information is recorded, and the result of the task is communicated using informal language and symbolism as per workplace procedures. |
| 1. Locate, compare and use highly familiar measurement for work | 1. Measurements in highly familiar workplace documents and tasks are located as per standard operating procedures 2. Different units of measurements and their uses are identified in accordance with job specifications 3. The comparative relationship between the units of measurement identified as per standard operating procedures. 4. Understanding of conversion of amounts is demonstrated in accordance with requirements. 5. Informal language is used to compare measurements as per workplace procedures. 6. Digital time is well read and am and pm used in reference to time 7. Calendar used appropriately to record information in accordance with organizational events. 8. Basic measurement information is well read and recorded as per the manuals 9. Additions and subtraction of simple quantities done in workplace as per SOPs. |
| 1. Use highly familiar maps and diagrams for work | 1. Familiar items or places are in highly familiar maps and diagrams in accordance with SOPs 2. Simple symbols and pictorial representations are identified in accordance with familiar maps and diagrams 3. Simple oral directions are given to locate objects as per SOPs 4. Simple oral directions followed to locate objects as per job specifications 5. Understanding of informal directional language is demonstrated as per work procedures. |
| 1. Identify and use some common 2D shapes for work | 1. ***Common two-dimensional* shapes** are identified and named as per SOPs 2. Common objects are described in terms of size and shape as per SOPs 3. Common, every day, informal language is used to compare objects in accordance SOPs 4. Common objects are grouped based on shape, size, colour and features as per job requirements |
| 1. Locate specific Information in highly familiar tables, graphs and charts for work | 1. Features of simple tables identified as per work place procedures 2. Specific numerical information located in highly familiar tables using grid movement (up and down columns and across rows) and key as graph and chart manuals 3. Numerical information and data in highly familiar tables compared using appropriate informal language as per workplace procedures. 4. Information related to relevant workplace tasks as per workplace procedures 5. Features of simple graphs and charts identified as per SOPs 6. Specific numerical information located in highly familiar graphs and charts as per workplace procedures. 7. Numerical information and data compared using appropriate informal language as per SOPs. |

**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. Common two -dimensional shapes: may include but not limited to: | * + Round/circle   + Square   + Rectangular   + 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. Measured objects or materials as per job requirements   2. Used calculator to perform the four fundamental operations   3. Performed calculations involving money up to one hundred thousand   4. Performed conversions between hours, minutes and seconds   5. Calculated area and volume of regular shapes   6. Created tables and graphs to represent and interpret information | |
| 1. Resource Implications for competence assessment | 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 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written Test   2. Interview   3. Oral Questioning   4. Demonstration |
| 1. Context of Assessment | Competency may be assessed  4.1 On the job  4.2 Off the job  4.3 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: AQ/OS/AT/BC/03/3/B**

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate digital literacy in a working environment. It entails identifying computer software and hardware, applying security measures to data, hardware, software, applying computer software in solving tasks and applying internet and email in communication at workplace.

**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 computer software and hardware | * 1. ***Computer software*** are identified according to manufacturer’s specification   2. ***Appropriate computer hardware*** is identified according to manufacturer’s specification |
| 1. Apply security measures to data, hardware, software | * 1. ***Data security and privacy are classified*** in accordance with the technological situation   2. ***Security and control measures*** are applied in accordance with laws governing protection of ICT   3. Computer threats and crimes are detected in accordance with information management guidelines.   4. Protection against computer crimes is undertaken in accordance with laws governing protection of ICT |
| 1. Apply computer software in solving tasks | * 1. Basic ***word processing concepts*** are applied in resolving workplace tasks as per job requirement.   2. ***Word processing utilities*** are applied in accordance with workplace procedures   3. Data is manipulated on worksheet in accordance with office procedures |
| 1. Apply internet and email in communication at workplace | * 1. Electronic mail is applied in workplace communication in accordance with office procedures   2. Office internet functions are defined and executed in accordance with office procedures   3. ***Network configuration*** and uses are determined in accordance with office operations 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. Computer software may include but not limited to: | * Operating system * MS office * Web browser   Media players |
| 1. Computer hardware may include but not limited to: | * Computer Case * Monitor * Keyboard * Mouse * Hard Disk Drive * Motherboard * Video Card |
| 1. Data security and privacy may include but not limited to: | * Confidentiality * Cloud computing * Confidentiality * Cyber terrorism * Integrity -but-curious data serving |
| 1. Security and control measures may include but not limited to: | * Countermeasures and risk reduction * Cyber threat issues * Risk management |
| 1. Word processing concepts may include but not limited to: | * Create * Edit * Print * Documents |

**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 skills
* Basic ICT skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Input and output devices
* Central processing Unit (CPU)
* Peripherals
* Storage Media
* Software concept
* Types of concept
* Function of computer software
* Data security and privacy
* Security threats and control measures
* 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 sheet;
* Meaning, formulae, function and charts, uses, layout, data manipulation and application to cell
* Networking and Internet;
* Meaning, functions and uses of networking and internet.
* Electronic mail and world wide web
* Emerging trends and issues in ICT;
* Identify and apply 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 input, output, CPU and storage media devices of computers in accordance to computer specification   2. Identified concepts, types and functions of computer software according to operation manual   3. Identified and controlled security threats   4. Detected and protected computer crimes   5. Applied word processing in office tasks   6. Prepared work sheet and applied data to the cells in accordance to workplace procedures   7. Used Electronic Mail for office communication as per workplace procedure   8. Applied internet and World Wide Web for office tasks in accordance with office procedures   9. Applied laws governing protection of ICT |
| 1. Resource Implications for competence assessment | 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 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written Test   2. Observation   3. Practical assignment   4. Interview   5. Oral Questioning |
| 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 : AQ/OS/AT/BC/04/3/B**

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate Entrepreneurial skills. It involves developing entrepreneurial culture, identifying entrepreneurial opportunities, starting, operating and growing a small business.

**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. Develop entrepreneurial culture | 1. ***Entrepreneurship terminologies*** are defined following established procedures. 2. Contribution of entrepreneurship towards national development is identified in accordance to national development goals 3. Self-employment benefit are identified and emphasized to help create a positive attitude 4. Cultural factors that promote or inhibit entrepreneurial development areidentified and emphasis made on entrepreneurial promotion 5. Ways of managing factors that inhibit development of entrepreneurial culture are identified in accordance withcultural background and national social economic situation |
| 1. Identify entrepreneurial opportunities | 2.1 Myths associated with entrepreneurship, types of entrepreneurs and characteristics of entrepreneurship are determined in accordance with the set procedures  2.2 Identification of ***sources of business ideas,*** generation of business ideas is undertaken in accordance with the existing procedure  2.3 Evaluation of business opportunities is undertaken according to prevailing office procedures  2.4 Competencies are matched with business opportunities in accordance with business practices. |
| 1. Start a small business | 3.1 Factors to consider when starting a small business are identified according to business sector.  3.2 ***Forms of business ownership*** are identified and procedure of starting a small business stipulated according to relevant legal requirements  3.3 Procedure of starting a small business is identified as per the legal requirements  3.3 Challenges faced when starting a small business are identified and mitigating factors provided for in accordance prevailing legal and regulatory requirement  3.4 Resource requirement for a small business are specified according to nature of business  3.5 Business life cycle is projected as per the nature of business and national social economic situation |
| 1. Operate a small business | 4.1 Relevant terms are defined in accordance with the set rules  4..3 Small business record is maintained in accordance with office procedures  4.4 Business support services are set up in accordance with the nature and size of business  4.**5** Marketing activities are effected according to the nature and size of business  4.6 Small enterprise business plan is prepared depending on the size and nature of business and the client specification  4.6 Small business resources are run for efficiency and profitability  4.6 Small business records are kept for decision making purposes  4.7 Word processing concepts are applied in the management of small business according to office procedures  4.8 Basic computer application software and emerging trends and concerns are applied in small business management in accordance with office procedures |
| 1. Grow a small business | 5.1 Methods of growing/expanding a small business are identified and implemented in accordance with growth schedule  5.2 Resources for growing small business are identified and implementing  5.3 Small business growth plans are prepared according to growth schedule  5.4 ICT and small business growth schedule is prepared in accordance with office procedures  5.5 Use of computers and technology is incorporated in small scale business growth schedule in accordance with technological trends  5.6 Social media is used for business growth and profitability  5.7 Emerging issues and trends are considered in accordance with business growth schedule and activities  5.8 Community interest is built in product/service according to growth plan  5.9 Business communication is enhanced according to business communication planand profitability  5.10Basic business growth strategies are identified and implemented for increased profitability  5.11 Word processing concepts are applied in growing of small business according to office procedures  5.12 Basic computer application software, programming and emerging trends and concerns are applied in small business growth in accordance with office procedures for growth and profitability |

**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. Entrepreneurship terminologies include but not limited to: | * Intrapreneurship * Enterprise * Business vision. Mission, core values, objectives |
| 1. Sources of business ideas may include but not limited to: | |  | | --- | | * Brainstorming * Personal hobbies * Newspapers, magazines, * Friends and relatives * Accounting/Administrative work * Modern trends and concerns | |
| 1. Forms of business ownership may include but not limited to: | * Sole proprietorship * Partnership * Limited Company * Unlimited Company |

**REQUIRED SKILLS AND KNOWLEDGE**

**Required Skills**

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

The individual needs to demonstrate the following skills:

* Marketing skills
* Advertising
* Basic book-keeping
* accounting skills
* Communication skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Public relations concepts
* Basic product promotion strategies
* Basic market and feasibility studies
* Basic business ethics
* Building customer relations
* Business models and strategies
* Types and categories of businesses
* Business internal controls
* Relevant national and local legislation and regulations
* Basic quality control and assurance concepts
* Building relations with customer and employees
* Building competitive advantage of the enterprise

**EVIDENCE GUIDE**

This section describes the required skills which supports performance. These skills will need to be considered in the learning and assessment process.

|  |  |  |
| --- | --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   |  | | --- | | 1.1 Demonstrated basic entrepreneurial skills  1.2 Demonstrated ability to conceptualize and plan a micro/small enterprise  1.3 Demonstrated ability to manage/operate a micro/small-scale business  1.4 Demonstrated basic marketing skills | |
| 1. Resource Implications for assessment | 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 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   |  |  | | --- | --- | | 3.1 Written tests  3.2 Oral Questioning  3.3 Observation  3.4 Third Party Report |  | |
| 1. Context of Assessment | |  | | --- | | Competency may be assessed  4.1 On the job  4.2 Off the job  4.3 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:AQ/OS/AT/BC/05/3/B**

**UNIT DESCRIPTON**

This unit covers competencies required to demonstrate employability skills. It involves conducting self-management, demonstrating critical safe work habits, demonstrating workplace learning and workplace ethics.

**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 objectives 9. Self-strengths and weaknesses are identified based on personal objectives |
| 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. 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 workplace ethics | 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.

|  |  |
| --- | --- |
| **Range** | **Variable** |
| 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. Team may include but not limited to: | * Small work group * Staff in a section/department * Inter-agency group |
| 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 |

**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
* Critical thinking
* Observation
* Organizing
* Record keeping
* Problem solving
* Decision Making
* Resource utilization

**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
* Personal hygiene practices
* Workplace communication
* Concept of time
* Time management
* Decision making
* Types of resources
* Work planning
* Organizing work
* Record keeping
* Workplace problems and how to deal with them
* Assertiveness
* Team work
* HIV and AIDS
* Drug and substance abuse
* Safe work habits
* Professional growth and development
* Technology in the workplace
* Innovation
* Emerging issues
  + Social media
  + Terrorism
  + National cohesion

###### **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 critical safe work habits   3. Demonstrated workplace learning   4. Demonstrated workplace ethics |
| 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. Oral questioning 2. Portfolio of evidence 3. Third Party Reports 4. Written tests |
| 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 :** **AQ/OS/AT/BC/06/3/B**

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate environmental literacy. It involves controlling environmental hazard, controlling environmental pollution and demonstrating sustainable resource use.

**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. Control environmental hazard | 1. Storage and handling methods for environmentally hazardous materials are strictly followed according to environmental regulations and OSHS. 2. Disposal methods of hazardous wastes are followed at all times according to environmental regulations and OSHS. 3. ***PPE*** is used according to OSHS. |
| 1. Control environmental Pollution | * 1. ***Environmental pollution******control measures*** are complied with following standard protocol.   2. Procedures for solid waste management are observed according Environmental Management and Coordination Act 1999   3. Methods for minimizing noise pollution complied following environmental regulations. |
| 1. Demonstrate sustainable use of resource | * 1. Methods for minimizing wastage are complied with.   2. ***Waste management procedures*** are employed following principles of 3Rs (Reduce, Reuse, Recycle)   3. Methods for economizing or reducing ***resource*** consumption are practiced. |

**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. Environmental pollution 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 |
| 1. Waste management procedures may include but not limited to: | * Sorting * Storing of items * Recycling of items * Disposal of items |
| 1. Resources may include but not limited to: | * + Electric   + Water   + Fuel   + Telecommunications   + Supplies * Materials |
| 1. Workplace environmental hazards may include but not limited to: | * Biological hazards * Chemical and dust hazards * Physical hazards |

**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
* Observation
* Writing
* Analytical

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Storage methods of environmentally hazardous materials
* Disposal methods of hazardous wastes
* Usage of PPE Environmental regulations
* OSHS
* Types of pollution
* Environmental pollution control measures
* Different solid wastes
* Solid waste management
* Different noise pollution
* Methods of minimizing noise pollution
* Solid Waste Act
* Methods of minimizing wastage
* Waste management procedures
* Economizing of resource consumption
* Principle of 3Rs

**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:  1.1 Controlled environmental hazard  1.2 Controlled environmental pollution  1.3 Demonstrated sustainable resource use |
| 1. Resource Implications for assessment | The following resources should be provided:   * 1. Workplace with storage facilities   2. Tools, materials and equipment relevant to the tasks (ex. Cleaning tools, cleaning materials, trash bags, etc.)   3. PPE   4. Manuals and references |
| 1. Methods of Assessment | Competency in this unit may be assessed through:  3.1 Observation  3.2 Oral questioning  3.3 Written examination |
| 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: AQ/OS/AT/BC/07/3/B**

**UNIT DESCRIPTION**

This unit specifies the competencies required to practice and promote safety and health at work. This entails preparing to practice safety and health at work and complying and promoting compliance of workers to organization’s occupational safety and health instructions and requirements

**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 practice safety and health at work | 1.1 Awareness of legislation that outlines the minimum standards for occupational safety and health requirements/ regulations are emphasized  1.2 Benefits of implementing an occupational safety and health program are identified  1.3 ***Safety requirements/ regulations*** of own work and of other workers are familiarized  1.4 Workplace standards and procedures ***for incidents and Emergencies*** are determined  1.5 ***Prevention and control measures***, including use of ***safety gears/PPE*** (Personal Protective Equipment) to avoid accident, injuries and sickness are identified |
| 1. Comply and promote compliance of workers to organization’s occupational safety and health instructions and requirements | 2.1 Safety instructions and safety signs are followed and disseminated to co-workers  2.2 Safe handling of tools, equipment and materials is learned and shared with co-workers  2.3 Execution of own work and of co-workers is monitored in  according to safe work procedures  2.4 Use of safe guards and safety devices is monitored  2.5 Hazards, incidents, injuries and sickness in the workplace are reported properly following standards and 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. Safety requirements regulations may include but are not limited to: | * Building code * Permit to Operate * Occupational Safety and Health Standards |
| 1. Incidents and emergencies may include but are not limited to: | * Chemical spills * Equipment/vehicle accidents * Explosion * Fire * Gas leak * Injury to personnel * Structural collapse * Toxic and/or flammable vapors emission. |
| 1. Prevention and control measures may include but are not limited to: | * Eliminate the hazard * Isolate the hazard * Substitute the hazard with a safer alternative * Use administrative controls to reduce the risk * Use engineering controls to reduce the risk * Use personal protective equipment * Safety, Health and Work Environment Evaluation * Periodic and/or special medical examinations of workers |
| 1. Safety devices/ PPEs (personal protective equipment) May include but are 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 |

**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
* Observation
* Reporting
* Organizing

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Elements of an effective occupational safety and health program
* Benefits of implementing an occupational safety and health program
* Safety requirements of own work and of other workers
* Standard emergency plan and procedures in the workplace
* Different OSH control measures
* General OSH principles
* Work standards and procedures
* Safe handling procedures of tools, equipment’s and materials
* Standard emergency plan and procedures in the workplace
* Different OSH control measures
* Standard accident and illness reporting procedures in the workplace
* Monitoring system on compliance to work safety and health

**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. Arranged work area and items in accordance with workplace procedures requirements 2. Followed work standards and procedures based on instructions 3. Applied ***Prevention and control measures*** based on instructions 4. Undertook orientations on ***OSH requirements and regulations*** in line with policy. 5. Provided feedback on occupational health and safety as per workplace instructions. 6. Adhered to workplace procedures for reporting hazards, incidents, injuries and sickness to as per workplace policy. 7. Identified and proposed ***OSH-related training needs*** as per workplace policy. |
| 1. Resource Implications for assessment | 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. Oral questioning 2. Portfolio of evidence 3. Third Party Reports 4. Written tests |
| 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

## CONSTRUCT A FISH POND

**UNIT CODE: AQ/OS/AT/CR/01/3/B**

**UNIT DESCRIPTION**

This unit specifies the competencies required to construct a fish pond. It involves the ability to implement fish pond site food safety plan, prepare a fish pond construction site, excavate the pond, make pond drainage systems, and carry out completion and other supplementary works on the finished ponds.

**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. Implement fish pond site food safety plan | 1. Farm site and adjacent site ***hazards*** are identified and documented 2. Possible***sources*** of physical, chemical and microbial hazardsare identified based on ***prior use of land.*** 3. Standard operating procedures for ***preventing*** and ***correcting*** fish feed safety risks are implemented based on the identified risks. |
| 1. Prepare pond construction site | * 1. ***Tools, equipment, materials*** and ***supplies*** are identified and gathered based on job requirements.   2. ***PPEs*** are identified and gathered as per job requirements.   3. Pond site is drained where necessary   4. Pond site is cleared of vegetation, debris and topsoil as instructed by ***immediate supervisor***   5. Cleared vegetation is disposed of as recommended by the supervisor |
| 1. Excavate fish pond | * 1. Safety precautions are applied according to site requirements   2. Tools, equipment, materials and supplies are identified and gathered based on job requirements.   3. PPEs are identified and gathered as per job requirements.   4. Fish pond area is measured and pegged following directions from immediate supervisor   5. A perimeter cut-off trench is constructed around the pond area based on the peg marks   6. Pond area is excavated following the peg markings, to a depth recommended by the supervisor   7. Dykes are constructed, shaped and aligned under supervision of a qualified technician   8. Pond leveling and inlet-outlet system are carried out under supervision of a qualified technician |
| 1. Construct pond drainage system | * 1. Pond water diversion channel is trenched following peg markings as directed by immediate supervisor.   2. Screening devices for in-coming water are installed under supervision   3. Flood control structures are installed as directed by supervisor   4. Drainage channels are constructed following peg markings as directed by immediate supervisor. |
| 1. Complete pond construction | * 1. ***Soil erosion control measures*** are put in place according to pond design   2. Pond is filled gradually with ***water fit for aquaculture*** to full capacity   3. Pond is checked and actionable defects reported to immediate supervisor   4. Water intake, pond inlets and outlets, and the drainage system are assessed against criteria provided by supervisor   5. Fencing and landscaping are carried out as per identified risks according to supervisor’s instructions   6. Predator control measures are put in place according to site place requirements and identified food safety risks   7. Site is cleared of equipment and debris 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. Prior use may include but not limited to: | * For animal feeding or domestic animal production; * As a waste disposal site (garbage or toxic industrial waste); * As a sanitary waste management site; * For mining activities, oil or gas extraction; * For former agricultural activities; * Prior use of adjacent land and neighbouring areas (risk of cross-contamination); * History of flooding in area of concern. |
| 1. Hazards may include but not limited to: | * Physical hazards * Chemical hazards   + Heavy metals   + Pesticides   + Industrial chemicals * Biological hazards   + Aquatic animal diseases * Naturally occurring toxins |
| 1. Sources may include but not limited to: | * Agricultural chemicals * Toxic plants * Fecal matter * Soil * Water |
| 1. Preventing may include but not limited to: | * Location, design and layout of farm * Farm waste management * Pond nets |
| 1. Correcting may include but not limited to: | * Pest control * Pond lining * Runoff control |
| 1. Tools, equipment, materials and supplies include but not limited to: | * Tools-tape measure, spirit level, water level, jembes, spades, pangas, * Equipment-plate compactors and rollers, wheelbarrows * Materials and supplies-ropes, liners, pegs, plumbing materials, lime, cement, sand |
| 1. Water fit for aquaculture include but not limited to | * Fish species specific recommended level of chlorine * Fish species specific Recommended pH range * Fish species specific Recommended Ammonia * Fish species specific recommended turbidity level * Free of infective pathogens |
| 1. PPE’s include but not limited to | * Gum boots, helmets, gloves, overalls, first aid kits |
| 1. Immediate supervisor includes but not limited to: | * Fisheries Officer * Assistant Fisheries Officer * Aquaculture technician Level 3, 4, or 5 |
| 1. Soil erosion control measures include but not limited to: | * Planting grass on the dykes, terracing |

**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 risk assessment and communication
* Trouble shooting
* Use of tools and equipment
* Measurement
* Communication skills
* Basic first aid skills
* Numeracy

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Food safety Standards (codes of practice for fish and fishery products)
* Regulatory bodies/ Competent authorities
* Hazard Analysis Critical Control Point (HACCP)
* Use of tools, equipment and PPEs
* Behavior of predators and related control measures
* Wetland vegetation

**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. Implemented fish pond site food safety plan   2. Used correct tools and equipment in construction   3. Cleared all vegetation and top soil, and stowed away from construction area   4. Constructed ponds to specifications as directed by supervisor   5. Noted and reported structural defects and faults to supervisor   6. Cleaned and stored tools and equipment as per work place procedures   7. Followed safety procedures   8. Accurately followed peg markings for the separate components |
| 1. Resource Implications | The following resources must be provided:   * 1. Workplace or assessment location   2. PPEs   3. Tools and equipment   4. Pond construction materials   5. Writing materials |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral presentation   3. Projects   4. Written tests |
| 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. |

## PRODUCE FISH FEEDS

**UNIT CODE: AQ/OS/AT/CR/02/3/B**

**UNIT DESCRIPTION**

This unit specifies the competencies required to produce fish feeds. It involves ability to implement fish feed production food safety plan, maintain ponds natural fertility and make on-farm fish feeds.

**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. Implement fish feed production food safety plan | * 1. Possible **sources** of physical, chemical and microbial contamination are identified based on   2. **Hazards** at each fish feed production stage are identified and listed   3. Standard operating procedures for preventing and correcting fish feed safety risks are implemented based on the identified risks. |
| 1. Promote growth of natural fish food | * 1. ***PPE’s*** are identified and gathered as per task requirements   2. ***Materials and equipment*** for producing natural fish foods are identified and gathered based on task requirements and identified food safety risks   3. Pond is cleaned, limed, dried and flooded with ***water fit for aquaculture***   4. Fish pond is fertilized based on measured pond’s ***natural productivity*** and applicable rates of fertilization as per identified food safety risks   5. Safety precautions are applied according to site requirements |
| 1. Prepare on-farm formulated fish feeds | * 1. ***On-farm feed production materials and equipment*** are identified and gathered based on the identified food safety risks, availability and cost.   2. Feed ingredient are identified and gathered based on prepared formulation   3. Feed ingredients are milled to fine particles of uniform size while observing food hygiene standards   4. Feed ingredient proportions are weighed according to the formulation and mixed uniformly   5. Feed mixture is pelletized and/or dried according to supervisor’s instructions |
| 1. Package and store fish feeds | * 1. Fish feed is weighed, packaged in food grade bags and sealed with clear ***label details***   2. Dry fish feeds are stored in clean, cool and dry areas   3. Moist fish feeds are properly refrigerated as per the identified food safety risks |
| 1. Keep feeding records | * 1. ***Records of feed ingredients*** are prepared and kept according to site requirements   2. Records of food safety parameters are maintained   3. Records of prepared feeds are prepared and kept according to site 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. Sources may include but not limited to: | * Ingredients used for formulation of feeds * Poor storage conditions * Pests * Rodents * Agricultural chemicals (pesticides) |
| 1. Contamination/hazards may include but not limited to: | * Mycotoxins (microbial) * Chemical * Heavy metals |
| 1. PPE’s include but not limited to | * Safety goggles, gum boots, helmets, gloves, dust coats, first aid kits, mouth piece |
| 1. Water fit for aquaculture include but not limited to | * Fish species specific recommended level of chlorine * Fish species specific Recommended pH range * Fish species specific Recommended Ammonia * Fish species specific recommended turbidity level * Free of infective pathogens |
| 1. Materials and equipment include but not limited to: | * Fertilizers, secchi disk, weighing scale * Thermometer, hygrometer, buckets, gunny bags, sticks, stakes, sample containers |
| 1. Natural productivity includes but not limited to: | * Phytoplanktons * Zooplanktons * Worms |
| 1. On-farm feed production materials and equipment include but not limited to: | * Meat mincer, blender/ grinder, weighing scale, dryer, mixer, containers, bag sealer, oven, burner, drying racks * Packaging bags, drying canvas/ polythene |
| 1. Label details include but not limited to: | * Date of manufacture * name of manufacturer * date of expiry * storage conditions * protein level * pellet size * target species. |
| 1. Storage conditions include but not limited to: | * Humidity, temperature, ventilation, First In First Out |
| 1. Records of feed ingredients include but not limited to: | * Types * Date procured * Store quantities |

**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 risk assessment and communication
* Trouble shooting
* Use of tools and equipment
* Measurement
* Mixing of ingredients
* Basic first aid
* Numeracy
* Record keeping

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Food safety Standards (codes of practice for fish and fishery products)
* Regulatory bodies/ Competent authorities
* Hazard Analysis Critical Control Point (HACCP)
* Types of tools, equipment and PPEs
* Locally available fish feed raw materials
* Fish nutrition
* Mixing of particles

**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. Implemented fish feed production food safety plan   2. Applied lime and fertilizers to fish ponds correctly   3. Weighed accurate amounts of feed ingredients based on feed formulation   4. Mixed feed ingredients uniformly   5. Stored produced feed under recommended storage conditions   6. Maintained proper records on fish ingredients and prepared feeds   7. Observed safety precautions in the work place |
| 1. Resource Implications | The following resources must be provided:   * 1. Workplace or assessment location   2. PPEs   3. Materials and equipment   4. Raw materials   5. Writing materials |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral presentation   3. Oral questioning   4. Projects   5. Written tests |
| 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. |

## SUPPORT FISH HATCHERY OPERATIONS

**UNIT CODE: AQ/OS/AT/CR/03/3/B**

**UNIT DESCRIPTION**

This unit specifies the competencies required to support the operations within a fish hatchery. It involves implementing fish hatchery food safety plan, preparing hatchery for stocking, stocking with brood stock, feeding the stock and harvesting the fry and fingerlings. It also involves packaging fish sees for transportation, maintaining the hatchery through cleanliness and regulating water flow rates.

**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. Implement fish hatchery food safety plan | 1. Food safety ***Hazards*** in the fish hatchery are identified and documented 2. Possible ***sources*** of physical, chemical and microbial contamination in the hatchery are identified based on the hazards 3. Standard operating procedures for ***preventing*** and ***correcting*** fish feed safety risks are implemented based on the identified risks. |
| 1. Prepare hatchery for stocking | * 1. ***PPE****’s* are identified and gathered as per task requirements   2. ***Tools, equipment and*** food grade ***materials*** are assembled as per task requirements   3. Fish holding and culture units are cleaned, disinfected and filled with water fit for aquaculture   4. Water flow within the systems is set at rates suitable for species under culture |
| 1. Stock hatchery with broodstock | * 1. Broodstock are selected based on their ***state of readiness*** for breeding by observation of physical features   2. Broodstock is acclimatized based on culture water temperatures   3. Selected broodstock for natural breeding is transferred to breeding facilities based on species specific stocking density   4. Broodstock are released into culture units based on fish stocking procedures |
| 1. Feed broodstock | * 1. Fish feeds are safely handled as per manual of standard operating procedures to avoid cross-contamination and adulteration.   2. Feeds are weighed as per the feeding schedule for the specified fish species   3. Weighed feed rations are divided by frequency of feeding as specified in the feeding schedule   4. Fish is fed using any of the appropriate methods based on labour available, weather conditions, size of the culture units   5. Fish feeding behavior is monitored during feeding and recorded |
| 1. Harvest fish seeds | * 1. Number and sizes of fish to harvest is prepared as per the identified market demand   2. ***Harvesting tools, equipment and*** food grade ***materials*** are assembled in line with task requirement   3. Harvesting of fish fry is carried out as per SOPs using appropriate nets and techniques based on pond layout   4. Harvested fish is sorted according to size demanded by the market while isolating any fish that may be diseased/ parasite infested. |
| 1. Package fish seeds for transportation | * 1. Packaging container are assembled as per the task requirements   2. Water fit for aquaculture is introduced into the packaging container to appropriate level   3. Fish fry or fingerlings are counted and released into the packaging material as per the standard operating procedure   4. Oxygen is released in to the package with fish to appropriate levels   5. Fish package container is sealed airtight |
| 1. Maintain the hatchery | * 1. Hatchery components cleaned with food grade cleaning agents as per the standard sanitary operating procedures   2. Water flow levels rates and levels maintained based on the fish stages reared |

**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: | * Parasites * Viruses * Bacteria * Hormones * Fish tags * Chemical hazards   + Heavy metals   + Pesticide residues |
| 1. Sources of hazards may include but not limited to: | * Infected parent stock/ broodstock * Poor water quality * Human carriers * Cleaning agents * Pesticides * Antibiotics misuse |
| 1. Preventing may include but not limited to: | * Quarantine of brooders * Good water quality * Sanitary and phytosanitary measures * Biosecurity measures |
| 1. Correcting may include but not limited to: | * Parasite control * Fish treatment * Water flow management * Sterilization of the hatchery |
| 1. PPE’s include but not limited to: | * Safety goggles, gum boots, wading suit, gloves, dust coats, first aid kits, life ring, life jacket |
| 1. Tools and equipment include but not limited to: | * Oxygen cylinder, weighing balance, measuring cylinders, perforators, basins, harvesting gear, happa nets, buckets, scoop nets, sieves of assorted sizes |
| 1. Materials include but not limited to: | * Salt, towel, warm water, feeds, fertilizers, assorted bowls, cleaning and disinfection agents |
| 1. State of readiness include but not limited to: | * Ready to spawn (swollen abdomen), not yet ready, already spawned |

**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 risk assessment and communication
* Trouble shooting
* Use of tools and equipment
* Weighing
* Numeracy
* Fish handling and packaging
* Identification of anatomical features
* Basic first aid
* Hand sexing of brooders
* Identification of signs of healthy fish

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Food safety Standards (codes of practice for fish and fishery products)
* Regulatory bodies/ Competent authorities
* Hazard Analysis Critical Control Point (HACCP)
* Types of tools, equipment and PPEs
* Basic fish anatomy
* Fish feeds and feeding
* Cleaning and disinfection procedures

**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. Implemented fish hatchery food safety plan   2. Set water flow within hatchery at appropriate rates   3. Reduced stress to the fish during stocking   4. Fed fish as per feeding schedule and prevailing weather conditions   5. Harvested and sorted fish seeds based on market demands   6. Minimized stress and mortalities of fish during transportation by proper packaging |
| 1. Resource Implications | The following resources must be provided:   * 1. Workplace or assessment location   2. PPEs   3. Materials, tools, and equipment   4. Broodstock |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral presentation   3. Oral questioning   4. Written tests   5. Practical tests |
| 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. |

## PRODUCE GROW OUT FISH

**UNIT CODE: AQ/OS/AT/CR/04/3/B**

**UNIT DESCRIPTION**

This unit specifies the competencies required to produce grow-out fish. It involves ability to implement fish grow-out food safety plan prepare grow out facilities, stock fish culture units with fry and fingerlings, feed and manage them until attainment of market size. It also involves the competencies required to maintain the fish culture units, control predators and harvest fish.

**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. Implement Fish Grow-out Food safety plan | * 1. Food safety ***Hazards*** in the fish grow-out are identified and documented.   2. Possible ***sources*** of physical, chemical and microbial contamination in the fish grow-out are identified based on the hazards   3. Standard operating procedures for ***preventing*** and ***correcting*** fish feed safety risks are implemented based on the identified risks. |
| 1. Prepare grow out culture units | * 1. ***PPEs***are identified and gathered as per task requirement   2. Safety precautions are adhered to   3. ***Tools, equipment and materials*** are assembled in line with task requirement   4. Fish culture units are drained to dryness   5. Fish culture tanks are cleaned and disinfected with food grade cleaning agents as per standard sanitary operating procedures   6. Excess pond bottom mud is removed till initial pond depth is attained   7. Fertilization and liming of culture units carried out based on recommended rates |
| 1. Stock grow out culture units | * 1. Fry or fingerlings are acclimatized based on culture unit temperatures   2. Fry or fingerlings are gently released in to culture units with minimum stress   3. Stocked ponds are monitored for fingerling stress and mortalities through direct observations |
| 1. Feed grow out stock | * 1. Fish feeds are safely handled to avoid cross-contamination and adulteration as per standard operating procedures   2. Feeds are weighed as per the feeding schedule for the specified fish species and size   3. Weighed feed rations are divided by the frequency of feeding as specified in the feeding schedule   4. Fish are fed using any of the appropriate methods based on labour available, weather conditions, size of the culture units   5. Fish feeding behavior is monitored during feeding based on normal behavior and recorded |
| 1. Maintain fish farm | * 1. ***Maintenance tools, equipment and materials*** are assembled as per the task requirements   2. Grass on pond dykes is cleared periodically as per good aquaculture practices   3. Infringing vegetation is cleared as per good aquaculture practices   4. Pipes and drainage channels are monitored and cleared blockages as per workplace procedures   5. Tools and equipment are cleaned and stored as per workplace procedures |
| 1. Monitor signs of stress and disease | * 1. Fish are observed for changes in behavior and physical appearance using a checklist provided by a ***fisheries technician***   2. Feeding response is monitored following standard farm procedures   3. Management related remedial measures for stressed and diseased fish are undertaken as directed by a fisheries technician as per International Organization for Animal Health (OIE) guidelines   4. Biosecurity measures are put in place to prevent disease outbreaks |
| 1. Control weeds, predators and intrusive animals | * 1. ***Fish predators and intrusive animals*** are identified   2. ***Pond weeds*** are located and removed as per good aquaculture management practices   3. ***Control measures*** for predators and intrusive animals are installed as per identified risks and good aquaculture management practices |
| 1. Harvest fish stock | * 1. ***Harvesting tools, equipment and*** food grade ***materials*** are assembled in line with task requirement and code of hygiene practice   2. Harvesting of fish is carried out using appropriate equipment and techniques while observing good hygienic practices   3. Harvested fish is sorted according to size and species while observing good hygienic practices   4. Harvesting tools, equipment and materials are cleaned with food grade cleaning agents and stored according to workplace procedures |
| 1. Maintain integrated animals on fish farm | * 1. Selected livestock moved into the housing structures and stocked at recommended densities.   2. Livestock are fed according to the feeding schedule   3. Housing structures are cleaned and repaired regularly as outlined in the farm management plan   4. Signs of stress and disease are noted and promptly reported to a livestock technician for action   5. Integrated livestock movement is controlled from the fish production sites   6. Livestock manure is completely decomposed and treated before fertilizing fish ponds as per manual of standard operating 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. Hazards may include but not limited to: | * Chemical hazards   + Heavy metals   + Pesticides   + Industrial chemicals * Physical hazards * Biological hazards   + Aquatic animal diseases   + Naturally occurring toxins |
| 1. Sources of hazards may include but not limited to: | * Poor feeding * Poor feed quality * Poor water quality * Human carriers * Cleaning agents * Pesticides * Industrial/ agricultural wastes |
| 1. Preventing may include but not limited to: | * Good water quality * Sanitary measures * Proper use of antibiotics * Disease management * Parasite control * Use of quality feed * Good hygienic practices * Biosecurity measures * Probiotics |
| 1. Correcting may include but not limited to: | * Disposal of contaminated fish * Fish treatment * Water flow management * Sterilization of the fish grow-out |
| 1. PPEs include but not limited to | * Safety goggles, gum boots, helmets, gloves, dust coats, first aid kits, industrial mouth piece |
| 1. Tools, equipment and materials include but not limited to: | * Measuring tape, weighing scale, wheelbarrow, pH meter, jembes, spades, rakes * Lime, fertilizer, ropes |
| 1. Grow out culture units includes but not limited to | * Earthen ponds, concrete tanks, plastic tanks, fiberglass, raceways, cages and pens |
| 1. Fisheries technician includes but not limited to: | * Assistant Fisheries Officer, Fisheries Officer, Aquaculture technician levels 4, 5 and 6, Aquaculture extension officer |
| 1. Fish predators and intrusive animals include but not limited to: | * Birds, mammals, reptiles, amphibians, invertebrates, man |
| 1. Control measures include but not limited to: | * Clearing grass, trimming vegetation, traps and scarecrows, net covers, twines, screens, fencing |
| 1. Harvesting tools, equipment and materials include but not limited to: | * Seine net, scoop net, buckets, laundry baskets, weighing scale, perforators |
| 1. Maintenance tools, equipment and materials include but not limited to: | * Slashers, machetes, jembes, spades, wheelbarrow, rakes, gunny bags |

**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 risk assessment and communication
* Trouble shooting
* Use of tools and equipment
* Basic plumbing
* Pond construction
* Measuring
* Fish handling
* Record keeping
* Fish feeding
* Predator control
* Fish harvesting
* Communication
* Basic first aid
* Numeracy

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Food safety Standards (codes of practice for fish and fishery products)
* Regulatory bodies/ Competent authorities
* Hazard Analysis Critical Control Point (HACCP)
* Types of tools, equipment and PPEs
* Fish disease
* Basic fish biology
* Fish feeds and feeding methods
* Types and characteristics of fertilizers
* Water quality parameters
* Fish predators and intrusive animals

**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. Implemented fish grow-out food safety plan   2. Drained grow out culture unit to dryness   3. Fertilized fish pond using the recommended rates   4. Acclimatized and gently released the fingerlings into culture units   5. Weigh accurate feed rations based on feeding schedule   6. Positively diagnosed fish for signs of stress and disease   7. Put in place effective measures for control of predators and intrusive animals   8. Harvested fish using appropriate techniques   9. Maintained a clean environment within and around the production area |
| 1. Resource Implications | The following resources must be provided:   * 1. Workplace or assessment location   2. PPEs   3. Tools, materials and equipment   4. Writing materials   5. Calculator |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral presentation   3. Oral questioning   4. Projects   5. Written tests |
| 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. |

## HANDLE HARVESTED FISH

**UNIT CODE: AQ/OS/AT/CR/05/3/B**

**UNIT DESCRIPTION**

This unit specifies the competencies required to hygienically handle harvested fish. It involves implementing fish harvesting food safety plan. It also includes preservation and processing of the fish and sales of the fish and fish products. It further involves disposal of wastes emanating from fish preservation and processing.

**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. Implement Fish Harvesting Food Safety plan | * 1. Food safety ***Hazards*** in the fish handling are identified and documented.   2. Possible ***sources*** of physical, chemical and microbial contamination in the fish handling are identified based on the hazards   3. Standard operating procedures for ***preventing*** and ***correcting*** fish feed safety risks are implemented based on the identified risks. |
| 1. Prepare harvested fish for preservation | * 1. Harvested fish are safely handled to avoid contamination as per code of hygiene practice for the handling, processing storage and the placing on the market of fish and fishery products.   2. ***Tools, equipment and*** food grade ***materials*** are assembled in line with task requirements   3. ***PPEs*** are identified and gathered as per task requirements   4. Harvested fish is graded while observing good hygiene practices   5. Fish is cleaned with potable water to remove all slime and foreign materials   6. Fish is de-scaled as per target market requirements   7. Fish is gutted to remove visceral material without rupturing   8. Gutted fish is cleaned with potable water to remove blood stains and gut remains from stomach cavity   9. Tools, equipment and materials used are cleaned with food grade cleaning agents thoroughly and stored in designated places |
| 1. Preserve harvested fish | * 1. Fish is preserved as per code of hygiene practice for the handling, processing, storage and the placing on the market of fish and fisheries products   2. Fish meant for short term preservation is kept in appropriate containers with ice in alternate layers in the ratio of 1:1 as per standard operating procedures   3. Fish meant for long term preservation is smoked, sundried, salted or frozen depending on market preference as per standard operating procedures. |
| 1. Process harvested fish | * 1. Fish for processing is handled while observing code of hygiene practices for the handling, processing storage and the placing on the market of fish and fishery products.   2. Whole fish is filleted as instructed by the supervisor   3. Whole fish, fish fillets or portions are deep fried to a golden-brown color   4. ***Packaging tools, equipment and*** food grade ***materials*** are assembled in line with task requirements   5. Processed fish products are packaged using food grade material appropriate to type, size and weight of the product.   6. Packaged products are stored in designated areas |
| 1. Manage waste from fish processing | * 1. Fish processing wastes are collected at each stage and separated according to their physical state.   2. Collected wastes are carefully handled to avoid cross contamination and harboring of pests   3. Disposal of the wastes is carried out as per standard operating procedures that comply to environmental management and coordination act (waste management regulations) |
| 1. Carry out sales of fish and fish products | * 1. Fish for sale is handled while observing code of hygiene practices for the handling, processing storage and the placing on the market of fish and fishery products   2. Price of fish and fish products is determined based on costs of production,   3. Market outlets are identified and contacted   4. Appropriate mode of transport to market is determined according to product form and quantities, and distance to market   5. Fish and fish products are sold at a profit   6. Records of sales proceeds are maintained according to workplace 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.

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| --- | --- |
| **Variable** | **Range** |
| 1. Hazards may include but not limited to: | * Pathogenic bacteria   + e.g. Salmonella spp. * Chemical contaminants   + e.g. Histamine * Viruses   + e.g. Hepatitis * Fungi   + Moulds * Foreign matter   + Hair   + Jewelry * Pests * Physical hazards |
| 1. Sources of hazards may include but not limited to: | * Personnel hygiene facilities and toilets * Cleaning agents * Wash water quality * Equipment and facilities * Lubricants * Wastes |
| 1. Preventing may include but not limited to: | * Personal hygiene * Personnel health checks every 6 months * Use of food grade cleaning agents and lubricants * Pest control * Fraud control * Use of potable water * Use of food grade equipment * Proper storage conditions * Maintenance and sanitation of equipment and facilities * Temperature controls (below 4°C) * Plant hygiene * Biosecurity measures * PPEs * Waste management |
| 1. Correcting may include but not limited to: | * Disposal of contaminated fish * Sterilization of the fish handling plant |
| 1. Tools, equipment and materials include but not limited to: | * Basins, buckets, hard brush, filleting tables, knives, waste disposal containers, ice box, drying racks, drying mats or canvass, domestic freezers, ice, salt, frying oil, crockery, |
| 1. PPEs include but not limited to | * Gum boots, head cover, gloves, dust coats, first aid kits, mouth piece, apron |
| 1. Packaging tools, equipment and materials include but not limited to | * Weighing balance, polybags, cartons, gunny bags, ice packs, baskets, cool boxes, sealing tape, labels, pallets, wheelbarrow |

**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:

* Use of tools and equipment
* Weighing
* Fish handling
* Fish preservation
* Fish processing
* Packaging
* Record keeping
* Communication
* Basic first aid
* Numeracy

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Food safety Standards (codes of practice for fish and fishery products)
* Regulatory bodies/ Competent authorities
* Hazard Analysis Critical Control Point (HACCP)
* Types of tools, equipment and PPEs
* Fish spoilage
* Fish handling, processing and preservation
* Selling and buying
* Workplace safety regulations

**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. Implemented harvesting food safety plan   2. Cleaned fish to remove all slime and foreign materials   3. Gutted fish to remove all visceral material   4. Preserved fish using appropriate method   5. Processed fish into various products   6. Packaged and stored fish products in designated areas   7. Sold fish products   8. Observed hygienic standards   9. Disposed of waste from fish processing |
| 1. Resource Implications | The following resources must be provided:   * 1. Workplace or assessment location   2. PPEs   3. Tools, materials and equipment   4. Writing materials   5. Calculator |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral presentation   3. Oral questioning   4. Simulation   5. Written tests |
| 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. |