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**REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARD**

**FOR**

**AQUACULTURE TECHNICIAN**

**LEVEL 5**

**PROGRAMME ISCED CODE:** **0831 454 A**

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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 the 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. These reforms resulted to the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No.14 of 2012). 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, certification be based on demonstration of competence and mode of delivery allows for multiple entry and exit in TVET programs.

The reforms also demand that industry informs curriculum development to ensure the curriculum addresses its competence needs. This Occupational Standard will thus inform the development of the Competency-Based Education and Training (CBET) curriculum for Aquaculture practitioners.

The Standard will also be the basis for the assessment of an individual for competency certification.

It is my conviction that this Occupational Standard will play a great role in the development of a competent human resource for sustainable development.

**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).

TVET Act CAP 201A and Sessional Paper No. 14 of 2012 on Reforming Education and Training in Kenya, emphasized the need to reform curriculum development, assessment and certification. This called for a shift to CBET to address the mismatch between skills acquired through training and skills needed by the industry as well as increase the global competitiveness of the Kenyan labor force.

Experienced trainers in conjunction with industry experts developed this curriculum.

**ACKNOWLEDGMENT**

This Occupational Standard were developed through the 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 input towards the development of this Occupational Standard.

I also thank all the individuals and organizations who participated in the validation of this Occupational Standard.

# **ABBREVIATIONS AND ACRONYMS**

|  |  |
| --- | --- |
| PPEs | Personal Protective Equipment |
| ISCED | International Standard Classification of Education |
| TVET | Technical and vocational education and training |

**KEY TO ISCED UNIT CODE**



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**OVERVIEW**

Aquaculture Attendant Level 5 qualification consists of competencies required by a person to perform the duties of an aquaculture attendant level 5.Agricultural marketing principles, farm management principle, animal anatomy and physiology, workshop technology, set up fish-rearing unit, produce fish feeds, operate fish hatchery, perform fish postharvest operations, produce table-size fish and produce ornamental fish.

Thus, the units of competency comprising aquaculture attendant level 5 qualifications include:

**Summary of Units of Competency**

|  |  |  |
| --- | --- | --- |
| **BASIC UNITS OF COMPETENCY** | | |
|  | 0611 451 02 A | Digital literacy |
|  | 0031 451 01A | Communication skills |
|  | 0223 451 03A | Work Ethics and Practices |
|  | 0417 451 04 A | Entrepreneurial skills |
| **CORE UNITS OF COMPETENCY** | | |
|  | 0831 451 01A | Perform aquaculture housing activities |
|  | 0831 451 02A | Produce Table-Size Fish |
|  | 0831 451 03A | Operate Fish Hatchery |
|  | 0831 451 04A | Produce Fish Feeds |
|  | 0831 451 05A | Operate aquaculture |
| 1. **6** | 0831 451 06A | Produce Ornamental Fish |
| 1. **7** | 0811 451 07A | Apply Farm Management Principles |
| 1. **8** | 0831 451 08A | Perform Fish Postharvest Operations |
| 1. **9** | 0811 451 09A | Apply Agricultural Marketing Principles |

# **APPLY DIGITAL LITERACY**

**UNIT CODE:** 0611 451 01A

**UNIT DESCRIPTION:**

This unit covers the competencies required to demonstrate digital literacy. It involves operating computer devices, solving tasks using the Office suite, accessing online/offline data and information, performing online communication and collaboration, applying cyber-security skills and performing jobs online. It also involves applying job entry techniques.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT**  These describe the key outcomes that make up workplace functions | **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. Operate computer devices | * 1. C***omputer device*** usage is determined as per workplace requirements.   2. ***Computer hardware*** is identified according to job requirements.   3. ***Computer software*** is identified according to workplace requirements.   4. Computer devices are turned on or off as per the correct workplace procedure.   5. ***Mouse techniques*** are applied in solving tasks as per workplace requirements.   6. Keyboardtechniques are applied in solving tasks as per workplace requirements.   7. Computer files and folders are created and managed as per workplace requirements.   8. ***Internet connection option***s are identified and applied in connecting computer devices to the Internet.   9. ***External devices*** are identified and connected to the computer devices as per the job requirement. |
| 1. Solve tasks using Office suite | 1. ***Word processing concepts***are applied in solving workplace tasks as per job requirements. 2. Worksheet data is entered and prepared in accordance with work procedures. 3. Worksheet data is built and edited in accordance with workplace procedures. 4. ***Data manipulation*** on a worksheet is undertaken in accordance with work requirements. 5. Worksheets are saved and printed in accordance with job requirements. 6. ***Electronic presentation concepts***are applied in solving workplace tasks as per job requirements. |
| 1. Manage data and information | * 1. Office ***internet services*** are identified and applied in accordance with office procedures.   2. ***Internet access applications*** are determined in accordance with office operation procedures.   3. Internet search is performed as per job requirements.   4. Online digital content is downloaded in accordance with workplace requirements.   5. Digital content is identified and backed up in accordance with workplace procedures. |
| 1. Perform online communication and collaboration | * 1. Netiquette principles are observed as per work requirements.   2. Electronic mail communication is executed in accordance with workplace policy.   3. Digital content copyright and licenses are identified and applied according to workplace policies and regulatory requirements.   4. ***Online*** ***collaboration tools*** are applied in accordance with workplace policies and regulatory requirements. |
| 1. Apply cyber-security skills | * 1. ***Data protection*** and ***privacy*** is classified in accordance with workplace policies and regulatory requirements.   2. ***Internet security threats*** are identified as per workplace policies and regulatory requirements.   3. Computer threats and crimes are detected in accordance to Information Management security guidelines   4. ***Cyber-security control measures*** are applied in accordance with workplace policies and regulatory requirements. |
| 1. Perform online jobs | * 1. ***Online job platforms*** are identified as per the job requirements.   2. Online accounts and profiles are created in accordance with the work requirements.   3. Online jobs are identified according to the bidder’s skillset.   4. Online digital identity is managed according to industry best practices.   5. Online job bidding is done as per the specific job requirements.   6. Online tasks are executed according to the job requirements.   7. Personal online payment account is managed in accordance with financial regulations. |
| 1. Apply job entry techniques | * 1. ***Job opportunities*** are sought based on competencies.   2. A winning resume/CV is developed as per job advertisement.   3. An application/cover letter is developed based on the job advertisement.   4. ***Certificates and testimonials*** are organized as per resume.   5. ***Interview skills*** are demonstrated as per job advertisement. |

**RANGE**

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

| **Variable** | **Range** |
| --- | --- |
| 1. Computer devices may include but are not limited to: | * Desktops * Laptops * Smartphones * Tablets * Smart watches |
| 1. Computer hardware may include but are not limited to: | * The System Unit E.g. Motherboard, CPU, casing, * Input Devices e.g. Pointing, keying, scanning, voice/speech recognition, direct data capture devices. * Output Devices e.g. hardcopy output and softcopy output * Storage Devices e.g. main memory e.g. RAM, secondary storage (Solid state devices, Hard Drives, CDs & DVDs, Memory cards, Flash drives * Computer Ports e.g. HDMI, DVI, VGA, USB type C etc. |
| 1. Computer software may include but are not limited to: | * System software e.g. Operating System (Windows, Macintosh, Linux, Android, iOS) * Application Software e.g. Word Processors, Spreadsheets, Presentations etc. * Utility Software e.g. Antivirus programs |
| 1. External devices may include but are not limited to: | * Printers * Projectors * Smart Boards * Speakers * External storage drives * Digital/Smart TVs |
| 1. Word processing concepts may include but are not limited to: | * Creating word documents * Editing word documents * Formatting word documents * Saving word documents * Printing word documents |
| 1. Mouse techniques may include but are not limited to: | * Clicking * Double-clicking * Right-clicking * Drag and drop |
| 1. Internet connection options may include but are not limited to: | * Mobile Networks/Data Plans * Wireless Hotspots * Cabled (Ethernet/Fiber) * Dial-Up * Satellite * ISDN (Integrated Services Digital Network) |
| 1. Data manipulation may include but are not limited to: | * Use of formulae * Use of functions * Sorting * Filtering * Visual representation using charts |
| 1. Electronic presentation concepts may include but are not limited to: | * Creating slides * Editing slides * Formatting slides * Applying slide effects and transitions * Creating and playing slideshows * Saving presentations * Printing slides and handouts |
| 1. Internet services may include but are not limited to: | * Communication Services * Information Retrieval Services * File Transfer * World Wide Web Services * Web Services * Directory Services * Automatic Network Address Configuration * NewsGroup * Ecommerce |
| 1. Internet access applications/software may include but are not limited to: | * Browsers * Email Apps * eCommerce Apps |
| 1. Online collaboration tools may include but are not limited to: | * Online Storage * Online productivity applications * Online meetings, * Online learning environments, * Online calendars * Social networks |
| 1. Data protection and privacy may include but not limited to: | * Confidentiality of data/information * Integrity of data/information * Availability of data/information |
| 1. Internet security threats may include but not limited to: | * Malware attacks * Social engineering attacks * Software supply chain attacks * Advanced persistent threats (APT) * Distributed denial of service (DDoS) * Man-in-the-middle attack (MitM) * Password attacks * IoT Attacks * [Phishing Attacks](https://onlinedegrees.sandiego.edu/top-cyber-security-threats/#phishing-attacks) * [Ransom ware](https://onlinedegrees.sandiego.edu/top-cyber-security-threats/#ransomware) |
| 1. Security threats control measures may include but not limited to: | * Counter measures against cyber terrorism * Physical Controls * Technical/Logical Controls * Operational Controls |
| 1. Online job platforms may include but are not limited to: | * Remo task * Data annotation.tech * Cloud worker * Up work * Oneforma * Appen |
| 1. Job opportunities may include but not limited to: | * Self employment * Service provision * product development * salaried employment |
| 1. Certificates and testimonialsmay include but not limited to: | * Academic credentials * Letters of previous employments/ services rendered * Letters of commendation * Certifications of participation * Awards |
| 1. Interview skills may include but not limited to: | * Listening skills * Grooming * Language command * Articulation of issues * Body language * Time management * Honesty * Generally knowledgeable in current affairs and technical area |

**REQUIRED KNOWLEDGE AND SKILLS**

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

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Computer Hardware and Software Concepts
* Computer Security Concepts (Data security and privacy)
* Cyber security threats and control measures
* Understanding Computer Crimes
* Detection and protection against computer crimes
* Laws governing protection of ICT in Kenya
* Digital Identity Management
* Netiquette Principles
* Fundamentals of Copyright and Licenses
* Word processing;
* Functions and concepts of word processing;
* Documents and tables creation and manipulations;
* Document editing;
* Document formatting;
* Word processing utilities
* Spread sheets;
* Meaning, types and importance of spread sheets;
* Components of spread sheets;
* Functions, formulae, and charts, uses and layout;
* Data formulation, manipulation and application to cells;
* Editing & formatting spread sheets;
* Presentation Packages;
* Types of presentation Packages.
* Creating, formulating, running, editing, printing and presenting slides and hand outs
* Networking and Internet;
* Internet connectivity.
* Browser and digital content management;
* Managing data, information, and digital content
* Electronic mail and World Wide Web
* Fundamentals of Online Working;
* Online Profile Management;
* e-Portfolio Management;
* Online Jobs Bidding;
* Online Payment Systems;
* Job entry techniques
* Job searching sites
* Interview preparation skills
* Interview handling

**Required skills**

The individual needs to demonstrate the following skills:

* Active listening
* Keyboard Skills
* Mouse Skills
* Analytical skills
* Creativity
* Interpretation Skills
* Communication
* Spread sheet operations (applying fundamental operations such as addition, subtraction, division and multiplication)
* Computer Use Safety Skills
* Document Editing Skills
* Document Formatting Skills
* Document Printing Skills
* Netiquette Skills
* Internet Browsing Skills
* Problem Solving Skills
* Online Collaboration Skills
* Cyber-security Skills
* CV writing
* grooming

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical aspects of competency | ***Assessment requires evidence that the candidate:***   * 1. Operated computer devices as per workplace policies and regulations.   2. Solved tasks using the office suite as per workplace policies and regulations.   3. Manage data and information as per workplace policies and regulations.   4. Performed online communication and collaboration as per workplace policies and regulations.   5. Applied cybersecurity skills in accordance with workplace policies and regulations.   6. Executed online tasks according to the job requirements.   7. Searched for job opportunity based on competencies.   8. Prepared job requirement documentations based on job opportunity.   9. Demonstrated interview skills based on the job opportunity. |
| 1. Resource implications | The following resources should be provided:   * 1. Appropriately simulated environment where assessment can take place.   2. Access to relevant work environments where assessment can take place.   3. Resources relevant to the proposed activities or task. |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Practical   2. Project   3. Third party report   4. Portfolio of evidence   5. Written tests   6. Oral questioning |
| 1. Context of Assessment | * 1. This competency may be assessed in a work place or in a simulated work place. |
| 1. Guidance information for assessment | * 1. Holistic assessment with other units relevant to the industry sector and workplace job role is recommended. |

# **APPLY COMMUNICATION SKILLS**

**UNIT CODE:** 0031 451 02A

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate communication skills. It involves applying communication channels, written, non-verbal, oral, and group communication skills.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT**  These describe the key outcomes that make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements that specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| --- | --- |
| 1. Apply communication channels | 1. Specific communication channels are identified and applied based on workplace requirements. 2. Challenges are identified and addressed as per the operational standards of the organization. 3. Communication channels are evaluated to meet workplace needs. |
| 1. Apply written communication skills | * 1. Types of written communication are identified and applied according to the workplace requirements.   2. Written communication needs are identified and implemented according to workplace procedures.   3. Written communication guidelines are analyzed, evaluated, and revised based on workplace needs. |
| 1. Apply non-verbal communication skills | 3.1 Existing non-verbal communication techniques are identified and applied based on organization policy.  3.2 Non-verbal communication techniques are articulated and modeled to enhance inclusivity according to workplace requirements. |
| 1. Apply oral communication skills | 4.1 Types of oral communication are identified and established as per organization policy.  4.2 Pathways of oral communication are identified and established as per organization policy.  4.3 Pathways of oral communication are reviewed according to organization procedures.  4.4 Pathways of oral communication are maintained according to the organization standards. |
| 1. Apply group communication skills | 1. Group communication strategies are appliedbased on the workplace needs. 2. Groups are organized in accordance with workplace procedures. 3. Effective questioning, listening and non-verbal communication techniques are used as per needs.   5.4 Group communication challenges are identified and addressed according to the workplace needs. |

**RANGE**

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

| **Variable** | **Range** |
| --- | --- |
| 1. Communication strategies may include but are not limited to: | * Language switch * Comprehension check * Repetition * Asking confirmation * Paraphrasing * Clarification request * Translation * Restructuring * Generalization |
| 1. Effective group interaction may include but not limited to: | * Identifying and evaluating what is occurring within an interaction in a non-judgmental 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 are not limited to: | * Establishing rapport * Eliciting facts and information * Facilitating resolution of issues * Developing action plans |

**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:

* Active listening
* Interpretation
* Negotiation
* Writing
* Oral skills
* Creative thinking
* Critical thinking
* Decision making
* Analytical
* Innovation
* Conflict skills
* Leadership
* Problem solving skills
* Management
* Organizational
* Teamwork

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Communication process
* Dynamics of groups
* Styles of group leadership
* Key elements of communications strategy
* Principles of effective communication
* Turn-taking techniques
* Conflict resolution techniques
* Work planning
* Work organization
* Company policies
* Company operations and procedure standards
* Fundamental rights at the workplace
* Personal hygiene
* Accountability
* Workplace problems and how to deal with them

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical aspects of Competency. | Assessment requires evidence that the candidate:   * 1. Identified and applied specific communication channels based on workplace requirements.   2. Identified and applied specific written communication correspondence according to the workplace requirements.   3. Applied and developed non-verbal strategies to communicate in all areas of the workplace requirements.   4. Established pathways of oral communication as per workplace policy.   5. Applied group communication strategies based on workplace needs. |
| 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. Resources relevant to the proposed activity or tasks. |
| 1. Methods of Assessment | * 1. Competency may be assessed through:   2. Practical   3. Project   4. Third party report   5. Portfolio of evidence   6. Written tests   7. Oral questioning |
| 1. Context of Assessment | * 1. This competency may be assessed in a work place or in a simulated work place. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# **APPLY WORK ETHICS AND PRACTICES**

**UNIT CODE:** 0417 451 03A

**UNIT DESCRIPTION**

This unit covers competencies required to effectively apply work ethics and practices. It involves the ability to: conduct self-management, promote ethical work practices and values, promote teamwork, manage workplace conflicts, maintain professional and personal development, apply problem-solving and promote customer care.

**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 Range*** |
| --- | --- |
| 1. Apply self-management skills | 1. Personal vision, mission and goals are formulated based on potential and concerning organization objectives and strategic plan 2. Self-esteem and a positive self-image are developed and maintained based on value 3. Emotional intelligence and stress management are demonstrated as per workplace requirements. 4. Assertiveness is developed and maintained based on the requirements of the job. 5. Accountability and responsibility for one's actions are demonstrated based on workplace instructions. 6. Time management, attendance and punctuality are observed as per the organization’s policy. 7. Personal goals are managed as per the organization’s objective 8. Self-strengths and weaknesses are identified based on personal objectives 9. Motivation, initiative and proactivity are utilized as per the organization policy 10. Individual performance is evaluated and monitored according to the agreed targets. |
| 1. Promote ethical work practices and values | 1. Integrity is demonstrated as per acceptable norms 2. Codes of conduct is applied as per the workplace requirements 3. Policies and guidelines are observed as per the workplace requirements 4. Professionalism is exercised in line with organizational policies |
| 1. Promote Team work | 3.1 ***Teams*** are formed to enhance productivity based on organization’s objectives  3.2 Duties are assigned to teams under the organization policy.  3.3 Team activities are managed and coordinated as per set objectives.  3.4 Team performance is evaluated based on set targets as per workplace policy.  3.5 ***Conflicts*** are resolved between team members in line with organization policy.  3.6 Gender and diversity-related issues are identified and mainstreamed in accordance with workplace policy.  3.7 Healthy ***relationships*** are developed and maintained in line with the workplace.  3.8 Adaptability and flexibility are applied in dealing with team members as per workplace policies |
| 1. Maintain professional and personal development | 4.1 ***Personal growth and development*** needs are identified and assessed in line with the requirements of the job.  ***4.2 Training and career opportunities*** are identified and utilized based on job requirements.  4.3 ***Resources*** for training are mobilized and allocated based on organizations and individual skills needs.  4.4 Licenses and certifications relevant to the job and career are obtained and renewed as per policy.  4.5 Recognitions are sought as proof of career advancement in line with professional requirements.  4.6 Work priorities and personal commitments are balanced and managed based on the requirements of the job and personal objectives.  4.7 Dynamism and on-the-job learning are embraced in line with the organization’s goals and objectives. |
| 1. Apply Problem solving skills | 5.1 ***Creative, innovative*** and practical solutions are developed based on the problem  5.2 Independence and initiative in identifying and solving problems are demonstrated based on the requirements of the job.  5.3 Team problems are solved as per the workplace guidelines  5.4 Problem-solving strategies are applied as per the workplace guidelines  5.5 Problems are analyzed and assumptions tested as per the context of data and circumstances |
| 1. Promote Customer Care | 6.1 Customers' needs are identified based on their characteristics  6.2 Customer ***feedback*** is allowed and facilitated in line with organization policies.  6.3 Customer concerns and complaints are analyzed and resolved in line with the set organizational culture.  6.4 Proactive customer outreach programs are implemented as per organizational policies  6.5 Customer retention strategies are developed and implemented in line with the organizational policy |

**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. Feedback may include but not limited to: | * Verbal * Written * Informal * Formal |
| 1. Conflicts include but are not limited to: | * Interpersonal Conflict. * Intrapersonal Conflict. * Intergroup Conflict. * Intragroup Conflict. |
| 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. Team may include but not limited to: | * Small work group * Staff in a section/department * Inter-agency group * Virtual teams |
| 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 include but not limited to | * Participation in training programs * Serving as Resource Persons in conferences and workshops * Capacity building |
| 1. Resource may include may but not limited to: | * Human * Financial * Technology |
| 1. Creative and innovative 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: | * Artificial Intelligence * Data confidentiality * 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:

* Active listening
* Critical thinking
* Organizational
* Negotiation
* Monitoring
* Evaluation
* Problem solving
* Decision Making
* Leadership
* Creative/innovative thinking
* Adaptability
* Conflict management
* Emotional intelligence
* Teamwork

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Work values and ethics
* Company policies and procedures
* Company operations, procedures and standards
* Flexibility and adaptability
* Concept of time and leisure time
* Decision making
* Work planning
* Organizing work
* Monitoring and evaluation
* Record keeping
* Gender and diversity mainstreaming
* Drug and substance abuse
* Professional growth and development
* creativity
* Innovation
* problem solving
* customer care
* Mentoring and coaching.
* 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 require evidence that the candidate:   * 1. Applied self-management skills as per organizational procedures.   2. Promoted ethical practices and values as per organizational procedures.   3. Promoted Teamwork as per workplace assignments.   4. Maintained professional and personal development as per organizational procedures.   5. Applied Problem-solving skills based on work requirements.   6. Identified customer needs based on their characteristics.   7. Gave back Customer feedback in line with organization policies. |
| 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. Resources relevant to the proposed activity or tasks. |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Practical   2. Project   3. Third party report   4. Portfolio of evidence   5. Written tests  1. Oral questioning |
| 1. Context of Assessment | 1. This competency may be assessed in a work place or in a simulated work place. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# **APPLY ENTREPRENEURIAL SKILLS**

**UNIT CODE: 0413 451 4A**

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate an understanding of entrepreneurship. It involves demonstrating an understanding of financial literacy, applying entrepreneurial concepts identifying entrepreneurship opportunities, applying business legal aspects, developing business innovative strategies, and developing business plans.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT**  These describe the key outcomes that make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements that specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in Range*** |
| --- | --- |
| 1. Apply Financial Literacy Skills | 1. ***Sources of personal and business******funds*** are identified as per financial procedures and standards 2. Personal finances are managed as per financial procedures and standards 3. Savings are managed as per financial procedures and standards 4. Debts are managed as per financial procedures and standards 5. Investments are undertaken as per financial procedures and standards 6. Insurance services are procured as per financial procedures and standards |
| 1. Apply entrepreneurial concept | 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. Salaried employment and self-employment are distinguished as per principles of entrepreneurship 6. ***Requirements for entry into self-employment*** are identified according to business procedures and standards 7. Roles of an Entrepreneur in an enterprise are determined according to business procedures and standards 8. **Contributions of entrepreneurship** to National development are identified as per business procedures and standards |
| 1. Identify entrepreneurial opportunities | 1. Business ideas are identified as per business procedures and standards 2. Factors to consider when evaluating business opportunity viability are explored based on business procedure and standards 3. Entrepreneurial opportunities are evaluated as per business procedures and standards 4. Business ideas and opportunities are generated as per business procedures and standards 5. Business life cycle is analyzed as per business procedures and standards |
| 1. Apply business legal aspects | 1. ***Forms of business ownership*** are identified as per legal procedures and practices 2. Business Registration and Licensing processes are identified as per legal procedures and practices 3. Types of Contracts and Agreements are analyzed as per legal procedures and practices 4. Employment Laws are identified as per legal procedures and practices 5. Taxation laws are identified as per legal procedures and practices |
| 1. Innovate Business strategies | 1. Business innovation strategies are determined by the organization standards 2. Creativity in business development is demonstrated in accordance with business standards 3. ***Innovative business standards***  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. Business idea is described as per business procedures and standards 2. Business description is developed as per business plan format 3. Marketing plan is developed as per business plan format 4. Organizational/Management plan is prepared in accordance with business plan format 5. Production/operation plan is prepared in accordance with business plan format 6. Financial plan is prepared in accordance with the business plan format 7. Executive summary is prepared in accordance with business plan format 8. Business plan is presented as per best practice 9. Business ideas are incubated as per institutional policy. |

**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. ***Sources of personal funds*** mayinclude but not limited to: | * Salary/Wages * Investments * Savings * Inheritance * Government Benefits |
| 1. ***Sources of business finance*** mayinclude but not limited to: | * Equity Financing * Debt Financing, * Personal Savings/Investment * Retained Earnings * Grants and Subsidies * Crowd funding * supplier Credit: * Leasing and Asset Financing: |
| 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. ***Forms of businesses ownership*** may include but not limited to: | * Sole proprietorship * Partnership * Limited companies * Cooperatives |
| 1. ***Innovative business standards*** 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 standards
* 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 standards
* Market and feasibility studies
* Government and regulatory processes
* Local and international business environment
* Relevant developments in other industries
* Regional/ County business expansion standards

**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 Sources of personal and business finance as per financial procedures and standards 2. Managed Personal finances as per financial procedures and standards 3. Made Investment decisions as per financial procedures and standards 4. GeneratedBusiness ideas and opportunities based on business procedure and standards 5. Analyzed business life cycle based on business procedure and standards 6. Determined business innovative standards as per business principles 7. Developed and presented a business plan as per regulatory framework. |
| 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. Written tests 2. Oral questions 3. Third party report 4. Interviews 5. Portfolio |
| 1. Context of Assessment | Competency may be assessed:   * 1. Workplace   2. Simulated work environment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# **PERFORM AQUACULTURE HOUSING ACTIVITIES**

**UNIT CODE: 0831 451 01A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to set up fish rearing unit. It involves constructing fish rearing units, installing inlet and outlet systems, predatory control devices and maintaining fish rearing units.

**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. Construct a fish-rearing unit | * 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   6. Safety precautions are applied according to site requirements   7. Tools, equipment, materials and supplies are identified and gathered based on job requirements.   8. PPEs are identified and gathered as per job requirements.   9. Fish pond area is measured and pegged following directions from immediate supervisor   10. A perimeter cut-off trench is constructed around the pond area based on the peg marks   11. Pond area is excavated following the peg markings, to a depth recommended by the supervisor   12. Dykes are constructed, shaped and aligned under supervision of a qualified technician   13. Pond leveling and inlet-outlet system are carried out under supervision of a qualified technician |
| 1. Install inlet and outlet systems | * 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. Install predatory control devices | * 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. Maintain fish rearing unit | * 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 |

**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 * 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 |
| 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:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Sanitary food handling practices
* Implementing sustainable waste management
* Applying first aid treatment

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Safety Practices
* Proper waste disposal
* Environmental protection and concerns
* Food safety principles and practices
* Good grooming and personnel hygiene
* Parts and functions of personal protective equipment
* First Aid Kit
* Sanitizing equipment

**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 appropriately used Personal Protective Equipment . 2. Identified, controlled and prevented aquaculture hazards 3. Implemented personnel hygiene and sanitation practices in aquaculture. 4. Implemented aquaculture workplaces’ safety measures 5. Implemented sustainable waste management practices in aquaculture. |
| 1. Resource implications | The following resources must be provided:   * 1. Work area/station   2. First Aid kit   3. PPE relevant to the activities   4. Stretcher   5. Materials, tools and equipment relevant to the unit of competency |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation |
| 1. Context of Assessment | Assessment could be conducted:  4.1 On-the-job  4.2 Off-the–job  4.3 During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# **PRODUCE TABLE SIZE FISH**

**UNIT CODE:** 0831 451 02A

**Unit Description**

This unit covers the competencies required to produce table-size fish. It entails preparing grow-out rearing units, stocking fingerlings and managing fish health.

**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. Prepare grow-out rearing 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 fingerlings | * 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 fish | * 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 behaviour is monitored during feeding based on normal behaviour and recorded |
| 1. Manage fish health. | * 1. Fish are observed for changes in behaviour 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 |

**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.

|  |  |
| --- | --- |
| Variables | Range  Includes but not limited to: |
| 1. Personal protective equipment | * Gloves * Arm/Hand guard, gloves * Hair Net/cap/bonnet * Face protection (mask, shield) * Apron/Gown/coverall/jump suit |
| 1. Commonly farmed fish species | * Fresh water fish species e.g. Nile tilapia and African cat fish * Ornamental fish species e.g. American guppy and gold fish * Salty water fish species e.g. milkfish and prawns |
| 1. Feeding behavior | * Carnivorous fish such as African catfish * Herbivorous fish such as tilapia * Omnivorous fish such as gold fish and guppies |
| 1. Reproductive behavior | * Mouthbrooding in tilapia |
| 1. Social behavior | * Shoaling and schooling |
| 1. Defensive behavior | * Flight |

**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:

* Organizing skills
* Analytical skills
* Negotiation skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Observation skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Fish biology for commonly farmed fish species
* Fish behavior

**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 relevant PPEs   2. Identified aquaculture fish species   3. Identified fish parts/external morphology   4. Demonstrated the understanding of fish behavior |
| 1. Resource implications | The following resources must be provided:  2.1 Laboratory  2.2 Library |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation |
| 1. Context of Assessment | Assessment could be conducted  4.1. On-the-job  4.2. Off-the–job  4.3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# **OPERATE FISH HATCHERY**

**ISCED UNIT CODE: 0831 451 03A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to operate a fish hatchery. It involves preparing hatchery for stocking, stocking and feeding the brood stock, naturally propagating farmed fish and harvesting the fry and fingerlings. It also involves packaging fish sees for transportation, maintaining the hatchery through cleanliness and regulating water flow rates.

|  |  |
| --- | --- |
| **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 fish hatchery | * 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 pond is filled with water fit for aquaculture to required depth based on pond depth and purpose   4. Fish pond fertilized based on recommended fertilization rates as per identified food safety risks   5. Fish happas are cleaned, disinfected as per cleaning and sanitation procedures and appropriately set in the fish pond   6. Water flow within the fish pond is set at rates suitable for species under culture and evaporation rates. |
| 1. Stock brood fish | * 1. Broodstock are selected based on their state of readiness for breeding by observation of physical features   2. Broodstock is acclimatized based on pond water temperatures   3. Selected broodstock for natural breeding is transferred to culture facilities based on species specific stocking density   4. Broodstock are released into the culture facilities based on fish stocking procedures |
| 1. Nurse fry and fingerlings | * 1. Fish feeds are safely handled 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. Maintain the hatchery | * 1. Indoor and outdoor hatchery components are cleaned with food grade cleaning agents   2. Water flow levels rates and levels within the culture units are 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. Correcting may include but not limited to: | * Parasite control * Fish treatment * Water flow management * Sterilization of the hatchery |
| 1. Food safety standards | * Codes of practice * Principles of food hygiene |
| 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: | * 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: | * Weighing balance, measuring cylinders, perforators, basins, harvesting gear, happa nets, buckets, scoop nets, sieves of assorted sizes |
| 1. Harvesting include but not limited to: | * Partial or complete harvesting |
| 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:

* 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.

|  |  |
| --- | --- |
| 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. Produced high quality health fish seeds   6. Harvested and sorted fish seeds based on market demands   7. Minimized stress and mortalities of fish during transportation by proper packaging |
| 1. Resource Implications for competence certification | The following resources must be provided:  2.1 Access to relevant workplace where assessment can take place  2.2 Appropriately simulated environment where assessment can take place  2.3 Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:  3.1 Observation  3.2 Oral presentation  3.3 Oral questioning  3.4 Written tests  3.5 Practical tests |
| 1. Context of Assessment | Competency may be assessed on the job, off the job or a combination of these. 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 role is recommended. |

# **PRODUCE FISH FEEDS**

**ISCED UNIT CODE: 0831 451 04A**

**UNIT DESCRIPTION**

This unit specifies the competencies required to produce fish feeds. It involves the ability to culture natural fish feeds, produce on-farm formulated fish feeds, package and store fish feeds and keep records

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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. Culture natural fish feeds | * 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. ***Natural productivity*** of pond is determined based on secchi depth   5. Fish pond is fertilized based according to pond’s natural productivity and recommended rates of fertilization while observing food safety |
| 1. Produce on-farm formulated fish feeds | * 1. ***On-farm feed production materials and equipment*** are identified and gathered based on task requirements and identified food safety risks   2. Feed composition is formulated using Pearson’s Square method based on available ingredients and ***nutrient requirements*** of target species   3. Feed ingredients are subjected to specified ***treatments*** to inactivate anti-nutritional factors   4. Feed ingredients are milled to fine particles while observing food hygiene standards   5. Feed additives where required are added as per standard and statutory requirements   6. Formulated feed proportions are weighed and mixed uniformly   7. Feed mixture is pelletized and/or dried to a moisture content of 10% or less |
| 1. Package and store fish feeds | * 1. Fish feed is weighed and packaged in sealed bags with clear ***label details***   2. Dry fish feeds are stored in cool and dry areas   3. Moist fish feeds are properly refrigerated as per the identified food safety risks |
| 1. Keep records | * 1. ***Records of feed ingredients*** are prepared and kept according to site requirements   2. Records of prepared feeds are prepared and kept according to site requirements   3. Records of food safety parameters are maintained   4. Produced feed is fed to target fish at recommended rates   5. Fish growth rate is monitored according to ***sampling plan***   6. Records are kept of fish growth response to feed |

**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 * Agrochemicals |
| 1. Contamination/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. 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 | * Safety goggles, gum boots, helmets, gloves, dust coats, first aid kits, mouth piece |
| 1. Materials and equipment include but not limited to: | * Fertilizers, secchi disk, weighing scale * Buckets , gunny bags, sticks, stakes |
| 1. Natural productivity include but not limited to: | * Phytoplanktons * Zooplanktons |
| 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. Nutrient requirements include but not limited to: | * Proteins, * Lipids/fats * Ash * Carbohydrates * Moisture * Mineral and vitamin |
| 1. Treatments include but not limited to: | * Roasting * Boiling * Fermentation * Sun-drying |
| 1. Label details include but not limited to: | * Date of manufacture * name of manufacturer * date of expiry * storage conditions * protein level * pellet size, * species. |
| 1. Records of feed ingredients include but not limited to: | * Types * Date procured * Store quantities |
| 1. Sampling plan includes but not limited to: | * Sampling frequency * Sample size * Sampling time |

**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:

* Trouble shooting
* Use of tools and equipment
* Measurement
* Mixing ingredients
* Communication
* Basic first aid
* Numeracy

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Regulatory bodies/ Competent authorities
* Hazard Analysis Critical Control Point (HACCP)
* Types of tools, equipment and PPEs
* On-farm fish feed formulation
* Locally available raw materials
* Nutritional composition of the raw materials and their properties

**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. Used secchi disk accurately   3. Formulated feed composition correctly as per target species   4. Applied the correct fertilizer at right amounts using appropriate method   5. Applied the right treatment to inactivate anti-nutritional factors in selected feed ingredients   6. Weighed accurate amounts of feed ingredients based on feed formulation   7. Mixed feed ingredients uniformly   8. Stored produced feed under recommended storage conditions |
| 1. Resource Implications for competence certification | The following resources must be provided:  2.1 Access to relevant workplace where assessment can take place  2.2 Appropriately simulated environment where assessment can take place  2.3 Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:  3.1 Observation  3.2 Oral presentation  3.3 Oral questioning  3.4 Projects  3.5 Written tests |
| 1. Context of Assessment | Competency may be assessed on the job, off the job or a combination of these. 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 role is recommended. |

# **PERFORM AQUACULTURE OPERATIONS**

**UNIT CODE: 0831 451 05A**

**UNIT DESCRIPTION**

This unit specifies the competencies required perform aquaculture operations. These include monitoring fish stock, water quality, handling fish stock, feeding fish stock, maintaining Recirculating Aquaculture Systems (RAS) and maintaining fish health.

**ELEMENT 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. Monitor fish stock | 1. ***PPEs*** are worn as per work requirement 2. ***Risk factors*** affecting health of ***stock*** during handling are identified as per fish farming manual 3. ***Monitoring equipment*** is checked as per fish farming manual 4. ***Housing*** is checked for damage as per fish farming manual 5. Monitoring equipment is positioned according to fish farming manual 6. Monitoring activities are carried out as per fish farming manual 7. Monitoring findings are recorded as per fish farming manual |
| 1. Monitor water quality | 1. PPEs, are worn as per work requirement 2. Tools and equipment are selected as per work requirement 3. ***Water supply* *system monitoring*** is carried outaccording to aquaculture water quality manual 4. Water treatment is applied as per work health and safety (WHS). |
| 1. Handle fish stock | 1. Tools and equipmentare selected as per work requirement 2. ***Conditions*** adversely impacting fish stock during handling are recorded as per fish farming manual 3. Housing structures are prepared to meet the requirements of incoming fish stock as per fish farming manual 4. ***Fish seeds*** are selected as per fish farming manual 5. Fish seeds are stocked as per fish farming manual 6. Fish stock records are maintained as work procedure |
| 1. Feed fish stock | 1. PPEs, are worn as per the work requirement 2. Feeding tools and equipment are assembled as per work requirements 3. Fish weight to volume ratio is calculated as per fish feeding manual 4. Feed quality and specifications are checked against labels and delivery documentation as per fish feeding manual 5. ***Fish feed type*** is identified according to fish species 6. Fish is fed according to fish feeding manual 7. Uneaten feed is removed from water as per fish feeding manual 8. Fish feeding response is monitored as per fish feeding manual 9. Fish feed is stored as per fish farming manual |
| 1. Maintain Recirculating Aquaculture Systems (RAS) | 1. PPEs are worn as per work requirement 2. Tools and equipment are selected as per work requirement 3. ***Pumps*** are operated as per manufacturer's manual 4. ***Pumping system servicing is carried out*** as per manufacturer's manual 5. Filtration system is unclogged as per manufacturer’s manual 6. Filtrated water is sterilized as per manufacturer's manual |
| 1. Maintain fish health | 1. PPEs are worn as per work requirement 2. Tools and equipment are assembled as per work requirement 3. Disease signs and symptoms in cultured fish are checked as per fish health manual 4. New fish stock received is quarantined as per fish health manual 5. Observations of abnormal fish stock behaviour, mortalities or moribund fish stock are recorded as per fish health manual |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Personal protective equipment may include but are not limited to: | 1. Gloves 2. Eye production 3. Lab coat 4. Rubber boots (steel toe) |
| 1. Risk factors may include but are not limited to: | 1. Scale loss 2. Loss of buoyancy balance 3. Physical injury to mucous membranes Eyes 4. Gills and fins |
| 1. Monitoring equipment may include but are not limited to: | 1. YSI handheld electronic meter 2. Doren water sampler 3. Buckets 4. Sample jars 5. Notebook |
| 1. Housing may include but are not limited to: | 1. Hatchery tanks 2. Net Pen 3. Pond |
| 1. Water supply system monitoring may include but are not limited to: | 1. Measuring and recording 2. Temperature 3. Oxygen 4. Ph 5. Ammonia 6. Total nitrogen and phosphorus |
| 1. Conditions may include but are not limited to: | 1. Rain 2. Wind and extreme Heat 3. Algal Bloom 4. Increased vessel traffic around net pen |
| 1. Fish seeds may include but are not limited to: | 1. Fry 2. Advanced fry 3. Fingerlings 4. Sub-adult fish |
| 1. Fish feed types may include but are not limited to: | 1. Live feed 2. Supplemental pelleted feed 3. Feed flakes 4. Phytoplankton/algae 5. Artemia 6. Rotifers |
| 1. Pumps may include but are not limited to: | 1. Submersible 2. Centrifugal 3. Diaphragm Pumps 4. Reciprocating pumps |
| 1. Pumping system servicing may include but are not limited to: | 1. Inspecting the motor 2. Lubrication 3. Replace damaged seals and horses 4. Mechanical inspection of couplings 5. Filters 6. Pump flanges 7. Checking mounting points status |

**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:

|  |  |
| --- | --- |
| * Microsoft Excel * Basic computer programming * Observation * Written * Listening * Problem-solving * Communication skills * Food safety risk assessment and communication | * Weighing * Numeracy * Fish handling and packaging * Dissection * Basic first aid * Identification of signs of healthy fish * Testing water quality * Training skills * Use of tools and equipment |

**Required Knowledge**

The individual needs to demonstrate knowledge of:

|  |  |
| --- | --- |
| * Theories and principles of polishing water for re-circulating systems * Optimal water quality parameters required for aquatic life * Basic protocols for filter cleaning * Basic protocols rotation and replacement * Servicing of pumps * Basic plumbing * Fish nutrition * Fish behaviour and movement * Food safety Standard | * Food Safety Hazards in Aquaculture * Good aquaculture practices * Good hygiene practices * Safety precautions * Principles of food hygiene * National legislation and regulations * Types of tools, equipment and PPEs * Use of water test kits and equipment * Basic fish anatomy and physiology * Fish diseases * Hazard Analysis Critical Control Points (HACCP |

**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 Risk factors affecting health of stock during handling as per fish farming manual 2. Checked housing for damage as per fish farming manual 3. Carried out monitoring activities as per fish farming manual 4. Recorded monitoring findings as per fish farming manual 5. Carried outwater supply system monitoring according to aquaculture water quality manual 6. Applied water treatment as per work health and safety (WHS 7. Recordedconditions adversely impacting fish stock during handling as per fish farming manual 8. Prepared housing structures to meet the requirements of incoming fish stock as per fish farming manual 9. Selected fish seeds as per fish farming manual 10. Stocked fish seeds as per fish farming manual 11. Maintained fish stock records as work procedure |
| 1. Resource Implications | The following resources should be provided:   * 1. Appropriately simulated environment where assessment can take place.   2. Access to relevant assessment environments.   3. Resources relevant to the proposed assessment activity or tasks. |
| 1. Methods of Assessment | * 1. Practical tests   2. Third party reports   3. Written test   4. Projects   5. Case studies   6. Portfolio of evidence |
| 1. Context of Assessment | 1. This competency may be assessed in a work place or in a simulated work place. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## **PRODUCE ORNAMENTAL FISH**

**UNIT CODE: 0831 451 06A**

**UNIT DESCRIPTION**

This unit covers the competencies required in the production of ornamental fish. It involves Breeding fresh water and marine water ornamental fish, constructing aquarium tanks and carrying out aqua capping.

**ELEMENT AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes that make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements that specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Breed fresh water and marine water ornamental fish | * 1. ***Selection of ornamental fish brooders*** is carried as per ornamental fish breeding manual   2. ***Breeding unit water is conditioned*** as per ornamental fish breeding manual   3. Ornamental fish brooders are paired according to ornamental fish breeding manual   4. Fertilized ornamental fish eggs are incubated as per ornamental fish breeding manual   5. Ornamental fish hatchlings are stocked as per ornamental fish breeding manual |
| 1. Construct aquarium tanks | * 1. PPEs are worn according to work requirement   2. ***Tools, materials and equipment*** are selected as per the work requirement   3. Aquaria is designed as per fish aquaria construction manual   4. Glass sheets are cut according to desired sizes as per fish aquaria construction manual   5. Cut glass sheets are mounted as per fish aquaria construction manual   6. Constructed aquaria leakages are test run as per fish aquaria construction manual |
| 1. Carry out aqua scaping | 1. PPEs are worn according to work requirement 2. Tools and equipment are selected as per work requirement 3. Aquaria layout is designed as per fish aquaria construction manual 4. ***Aquascaping materials*** are installed as per fish aquaria construction manual 5. ***Aquascaping styles*** are implemented as per fish aquaria construction manual |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| Selection of ornamental fish brooders include but are not limited to: | Selection is based on the following   1. Type Species 2. Intensity of colour 3. Reproduction mode 4. Courtship behaviour 5. Type of eggs produced |
| Breeding unit water is conditioned include but are not limited to: | 1. Dechlorination 2. Degassing 3. Aeration 4. Temperature stabilization 5. pH control |
| Tools, materials and equipment include but are not limited to: | 1. Breeding tanks 2. Thermostat heaters 3. Kakabans/Egg trays 4. Graders 5. Suction pipes, 6. Desiccators, 7. Dechlorinators 8. Magnetizers 9. Aquarium lighting 10. Aquarium filters 11. Submersible pump |
| Aquascaping materials include but are not limited to: | 1. Aqua Soils 2. Artificial/Natural Aquatic Plants 3. Aquarium driftwood 4. Aquarium rocks 5. Aquarium substrate 6. Gravel 7. Wall papers |
| Aquascaping styles include but are not limited to: | The following aquascaping styles can be used;   1. Dutch 2. Jungle 3. Iwagumi 4. Nature Aquarium |

**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:

* Intensive and selective catching techniques
* broodstock management and captive breeding
* Aquarium tank fabrication
* Glass plane cutting technique
* Sealants application skills
* Aquascaping techniques
* Fish feeds storage

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Freshwater ornamental fishes
* Breeding protocol and management methods
* Ornamental fish breeding techniques
* Types of sealants
* Principles of Aquascaping
* Aquascaping design and styles
* Ornamental feeding procedures
* Fish nutritional requirements
* Types of feeds and feeding methods
* Fish feeding ingredients
* Ornamental fish diseases

**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. Conditioned breeding unit water ***is*** as per ornamental fish breeding manual 2. Paired ornamental fish brooders according to ornamental fish breeding manual 3. Fertilized incubated ornamental fish eggs as per ornamental fish breeding manual 4. Stocked ornamental fish hatchlings as per ornamental fish breeding manual 5. Designed aquaria as per fish aquaria construction manual 6. Cut glass sheets according to desired sizes as per fish aquaria construction manual 7. Mounted cut glass sheet as per fish aquaria construction manual 8. Test run constructed aquaria leakages as per fish aquaria construction manual 9. Designed aquaria layout as per fish aquaria construction manual 10. Installed ***aquascaping materials*** as per fish aquaria construction manual 11. Implemented ***aquascaping styles*** as per fish aquaria construction manual |
| Resource Implications | The following resources should be provided:   * 1. An appropriately simulated environment where assessment can take place.   2. Access to relevant assessment environments.   3. Resources relevant to the proposed assessment activity or tasks. |
| Methods of Assessment | Competency may be assessed through:   * 1. Practical   2. Project   3. Third party report   4. Portfolio of evidence   5. Written tests   6. Oral questioning |
| Context of Assessment | 1. This competency may be assessed in a work place or in a simulated work place. |
| Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## **APPLY FARM MANAGEMENT PRINCIPLES**

**UNIT CODE: 0811 451 07A**

**UNIT DESCRIPTION**

This unit describes knowledge, skills and attitudes required to apply farm management principles. It involves applying farm management concepts, managing marketing challenges in agricultural production, and applying farm accounting techniques. It also involves application of farm planning techniques.

**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 farm management concepts | 1. ***Functions*** ***of farm management*** are applied based on enterprise requirements 2. ***Forms of business operations*** are applied based on existing business structures 3. ***Concepts of human resource management*** are applied based on agricultural enterprise needs |
| 2. Manage marketing challenges in agricultural production | 1. Risks and uncertainties in agricultural production are identified based on farm enterprise 2. Risks and uncertainties in agricultural production are managed based on farm enterprise 3. Constraints in agricultural marketing are managed based on the enterprise |
| 3. Apply farm accounting techniques | 1. ***Farm records*** are prepared and maintained based on agricultural enterprise 2. ***Books of account*** are prepared and maintained based on agricultural enterprise 3. ***Statements of account*** are prepared and maintained based on agricultural enterprise |
| 4. Apply farm planning techniques | 1. Farm plan is prepared based on agricultural enterprise 2. Farm budget is prepared based on agricultural enterprise 3. Business plan is developed based on farmer needs |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Functions of farm management may include but are not limited to: | 1. Decision making 2. Setting objectives 3. Forecasting 4. Planning 5. Implementation 6. Controlling |
| 1. Forms of business operations may include but are not limited to: | 1. Sole proprietorship 2. Partnerships 3. Cooperatives 4. Corporations 5. State corporations |
| 1. Concepts of human resource management may include but not limited: | 1. Interviews and recruitment 2. Staff development 3. Human relations and communication 4. Labour retention |
| 1. Farm records may include but not limited to: | 1. Breeding records 2. Labour records 3. Health records 4. Visitation records |
| 1. Books of account may include but not limited to: | 1. Ledger 2. Cash book 3. Purchase journal 4. Sales journal 5. Receipt books |
| 1. Statements of account may include but not limited to: | 1. Balance sheet 2. Income statements 3. Cash flow statement 4. Profit and loss account |

**REQUIRED KNOWLEDGE AND SKILLS**

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

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Functions of farm management
* Forms of business organizations
* Risks and uncertainties in agricultural production
* Concepts of human resource management
* Basic concepts in use of credit
* Farm records
* Farm accounts
* Farm planning
* Farm budgeting
* Business plans

**Required Skills**

The individual needs to demonstrate the following skills:

* Communication
* Problem solving
* Leadership
* Time management
* Teambuilding
* Critical thinking
* Management

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Applied Functions of farm management based on enterprise requirements 2. Applied concepts of human resource management based on agricultural enterprise needs 3. Managed Risks and uncertainties in agricultural production based on farm enterprise 4. Managed constraints in agricultural marketing based on the entreprise 5. Prepared and maintained books of account based on agricultural enterprise 6. Prepared and maintained Statements of account based on agricultural enterprise 7. Prepared farm budget based on agricultural enterprise 8. Developed business plan based on farmer needs |
| 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 assessment activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Practical   2. Project   3. Third party report   4. Portfolio of evidence   5. Written tests   6. Oral questioning |
| 1. Context of Assessment | 1. This competency may be assessed in a work place or in a simulated work place. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

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# **PERFORM FISH POSTHARVEST OPERATIONS**

**UNIT CODE: 0831 451 08A**

**UNIT DESCRIPTION**

This unit covers the competencies required in performing fish postharvest operations. It involves preparing harvested fish for value addition, preserving harvested fish and marketing whole fish and associated products.

**ELEMENT 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 harvested fish for value addition | * 1. ***PPEs*** for preparing harvested fish for value addition is worn as per work requirement   2. ***Tools and equipment*** for fish value addition preparation are assembled as per work requirement   3. ***Harvested fish cleaning*** is carried out as per work requirement   4. Harvested fish are sorted according to fish post-harvest manual   5. ***Fish waste management*** is carried out as per fish processing manual |
| 1. Process harvested fish | 1. PPEs are worn according to work requirement 2. Tools and equipment are selected as per work requirement 3. Harvested fish is graded according to size and species as per the target market 4. Fish is cleaned as per fish post-harvest manual 5. Fish is scaled as per target market requirements 6. Fish is gutted as per fish post-harvest manual 7. Gutted fish is cleaned as per fish post-harvest manual 8. Fish is smoked as per post-harvest manual 9. Fish is sundried as per postharvest manual 10. Fish is salted as per post-harvest manual 11. Fish is frozen as per post-harvest manual 12. Fish are fileted and frozen as per post-harvest manual 13. Long term presevation |
| 1. Perform fish marketing | * 1. PPE is worn as per workplace procedures.   2. Market survey is carried out based on principles of marketing handbook   3. Fish is assessed as per fish postharvest manual   4. Unsuitable fish is identified and disposed of as per postharvest manual   5. Fish display is examined as per fish postharvest manual   6. Current prices for products and services are identified and amended based on market conditions |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. PPEsincludes but is not limited to: | 1. Gloves 2. Face mask 3. Head cap/hair net 4. Apron 5. Gumboots 6. Face shield 7. Safety glasses |
| 1. Tools, equipment and materials include but are not limited to | * 1. Basins   2. Buckets   3. Hard Brus   4. Filleting Tables   5. Knives   6. Waste Disposal Containers   7. Ice Box   8. Smoking Kiln   9. Solar Dryer\Drying Racks   10. Drying Mats or Canvas   11. Domestic Freezers   12. Ice   13. Salt   14. Frying Oil   15. Meat Mincer   16. Blender |
| 1. Harvested fish cleaning includes but is not limited to: | 1. Gutting 2. Washing the exposed cavity 3. Scale removal 4. Rinsing 5. Cleaning the work bench |
| 1. Fish waste management includes but is not limited to: | 1. Landfill disposal 2. Land application 3. Compositing |

**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
* Training skills
* Use of tools and equipment
* Weighing
* Fish handling
* Fish preservation
* Fish processing
* Packaging
* Record keeping
* Communication

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Good aquaculture practices
* Good hygiene practices
* Safety precautions
* Principles of food hygiene
* National legislations and regulations
* Types of tools, equipment and PPEs
* Fish handling, processing, preservation and spoilage marketing and market outlets
* Workplace safety regulations
* Waste management regulations
* Record keeping

**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. Carried out harvested fish cleaning as per work requirement 2. Sorted harvested fish according to fish post-harvest manual 3. Carried out fish waste management as per fish processing manual 4. Harvested fish is graded according to size and species as per the target market 5. Kept fish meant for short-term preservation as per fish post-harvest manual 6. Smoked fish as per post-harvest manual 7. Sundried fish as per postharvest manual 8. Salted fish as per post-harvest manual 9. Frozen fish as per post-harvest manual |
| 1. Resource Implications | The following resources should be provided:   * 1. An appropriately simulated environment where assessment can take place.   2. Access to relevant assessment environments.   3. Resources relevant to the proposed assessment activity or tasks. |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Practical   2. Project   3. Third party report   4. Portfolio of evidence   5. Written tests   6. Oral questioning |
| 1. Context of Assessment | 1. This competency may be assessed in a work place or in a simulated work place. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# **APPLY AGRICULTURAL MARKETING PRINCIPLES**

**UNIT CODE: 0811 451 09A**

**UNIT DESCRIPTION**

This unit describes knowledge, skills and attitudes required to apply agricultural marketing principles. It involves carrying out market analysis, carrying out marketing functions in agricultural production and using agricultural marketing institutions.

**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 market analysis | 1. Agricultural Market information is collected based on farmers' preferences. 2. ***Type of market*** is identified based on market behaviour 3. Market structure, conduct and performance are analyzed based on based on selected agricultural produce |
| 2. Carry out marketing functions in agricultural production | * 1. Processing is carried out based on demand   2. Sorting and grading is carried out based on agricultural enterprise   3. Packaging, packing and labeling are carried out based on agricultural enterprise   4. Marketing ***channels*** are used based on enterprise |
| 3. Use agricultural marketing institutions | 1. ***Cooperatives*** are identified and used in agricultural marketing based on farm enterprise 2. ***Agricultural*** ***Marketing boards*** are used to market agricultural produce based on farm enterprise 3. Private companies are used to market agricultural produce based on farm enterprise |

**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. Type of market may include but not limited to: | 1. Perfect 2. Monopoly 3. Oligopoly 4. Monopsony |
| 1. Marketing channels may include but not limited to: | 1. Produce processors 2. Distributors 3. Wholesalers 4. Retailers |
| 1. Cooperatives may include but not limited to: | 1. Worker cooperatives 2. Consumer cooperatives 3. Union cooperatives |
| 4. Agricultural Marketing boards may include but not limited to: | 1. Kenya tea board 2. Pyrethrum board |

**REQUIRED KNOWLEDGE AND SKILLS**

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

**Required Knowledge**

The individual needs to demonstrate knowledge of:

**Required Skills**

* Market analysis
* Market structure, conduct and performance
* Marketing functions
* Marketing institutions

The individual needs to demonstrate the following skills:

* Analytical
* Problem Solving
* Interpretation
* Drawing
* Decision making
* Innovation
* Evaluation
* Data collection

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Identifiedtype of market is based on market behaviour 2. Analysed market structure, conduct and performance based on based on selected agricultural produce 3. Processed agricultural produce based on demand 4. Used Marketing channels based on enterprise 5. Identified and used agricultural marketing boards to market agricultural produce based on farm enterprise 6. Used private companies to market agricultural produce based on farm enterprise |
| 2. Resource Implications | The following resources should be provided:   1. Appropriately simulated environment where assessment can take place 2. Access to relevant workplace environment 3. Resources relevant to the proposed activities or task |
| Methods of Assessment | Competency may be assessed through:   * 1. Practical   2. Project   3. Third party report   4. Portfolio of evidence   5. Written tests  1. Oral questioning |
| Context of Assessment | 1. This competency may be assessed in a work place or in a simulated work place. |
| 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

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