****

**REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARDS**

**FOR**

**DAIRY FARM MANAGER**

**LEVEL 6**



TVET CDACC

P.O. BOX 15745-00100

NAIROBI

First published 2019

Copyright ©TVET CDACC

All rights reserved. No part of these Occupational Standards may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods without the prior written permission of the TVET CDACC, except in the case of brief quotations embodied in critical reviews and certain other non-commercial uses permitted by copyright law. For permission requests, write to the Council Secretary/CEO, at the address below:

**Council Secretary/CEO**

**TVET Curriculum Development, Assessment and Certification Council**

**P.O. Box 15745–00100**

**Nairobi, Kenya**

**Email:** [**info@tvetcdacc.go.ke**](mailto:info@tvetcdacc.go.ke)

# FOREWORD

The provision of quality education and training is fundamental to the Government’s overall strategy for social economic development. Quality education and training will contribute to achievement of Kenya’s development blueprint, Vision 2030 and sustainable development goals.

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

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

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

**PRINCIPAL SECRETARY, VOCATIONAL AND TECHNICAL TRAINING**

**MINISTRY OF EDUCATION**

# PREFACE

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

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

The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC), in conjunction with Dairy Sector Skills Advisory Committee (SSAC), German International Cooperation and Ministry of Agriculture, Livestock and Fisheries have developed these Occupational Standards for Dairy Farm Manager. TVET CDACC in conjunction with Micro Enterprises Support Programme Trust (MESPT) have reviewed these Occupational Standards and incorporated Food Safety. These standards will be the bases for development of competency-based curriculum for Dairy Farm Management Level 6.

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

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

**CHAIRPERSON, TVET CDACC**

# ACKNOWLEDGMENT

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

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

My gratitude also goes to NEPAD Planning and Coordinating Agency (NPCA) of the Africa Union Commission and German Ministry of Economic Cooperation and Development (BMZ) through its implementing agency German International Cooperation (GIZ) GmbH which enabled the development of these Standards through the CAADP ATVET project.

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

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

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

**CHAIRMAN**

**DAIRY SECTOR SKILLS ADVISORY COMMITTEE**

# ACRONYMS

ATVET Agricultural Technical and Vocational Education and Training

BC Basic Competency

CAADP Comprehensive Africa Agricultural Development Programme

CDACC Curriculum Development, Assessment and Certification Council

CR Core Competency

DA Dairy

DANIDA Danish International Development Agency

EMCA Environment Management Coordination Act

FM Farm Management

GIZ German International Cooperation

ICT Information Communication Technology

MESPT Micro Enterprises Support Program Trust

OS Occupational Standards

OSH Occupation Safety and Health

OSHA Occupation Safety and Health Act

OSHS Occupational Safety and Health Standards

PPE Personal Protective Equipment

SSAC Sector Skills Advisory Committee

TVET Technical and Vocational Education and Training

Contents

[FOREWORD iii](#_Toc66693615)

[PREFACE iv](#_Toc66693616)

[ACKNOWLEDGMENT v](#_Toc66693617)

[ACRONYMS vi](#_Toc66693618)

[KEY TO UNIT CODE viii](#_Toc66693619)

[OVERVIEW ix](#_Toc66693620)

[BASIC UNITS OF COMPETENCY 1](#_Toc66693621)

[DEMONSTRATE COMMUNICATION SKILLS 2](#_Toc66693622)

[DEMONSTRATE NUMERACY SKILLS 6](#_Toc66693623)

[**DEMONSTRATE ENTREPRENEURIAL SKILLS** 18](#_Toc66693624)

[DEMONSTRATE EMPLOYABILITY SKILLS 25](#_Toc66693625)

[DEMONSTRATE ENVIRONMENTAL LITERACY 33](#_Toc66693626)

[DEMONSTRATE OCCUPATIONAL SAFETY AND HEALTH PRACTICES 39](#_Toc66693627)

[CORE UNITS OF COMPETENCY 44](#_Toc66693628)

[LAYOUT DAIRY FARM 45](#_Toc66693629)

[DEVELOP DAIRY FARM STRUCTURES 50](#_Toc66693630)

[PRODUCE DAIRY FORAGE 55](#_Toc66693631)

[BREED DAIRY ANIMALS 60](#_Toc66693632)

[FORMULATE DAIRY FEED 64](#_Toc66693633)

[FEEDING DAIRY ANIMALS 69](#_Toc66693634)

[MILKING DAIRY ANIMALS 74](#_Toc66693635)

[MANAGEMENT OF DAIRY YOUNG STOCK 79](#_Toc66693636)

[MANAGEMENT OF DAIRY HERD HEALTH 83](#_Toc66693637)

[MANAGEMENT OF DAIRY FARM BUSINESS 88](#_Toc66693638)

# KEY TO UNIT CODE

**DA /OS /FM /BC/CR /01/ 6/B**

Industry or sector

Occupational Standards

Occupational area

Type of competency

Competency number

Competency level

Version control

# OVERVIEW

Dairy Farm Management level 6 consists of competencies that an individual must achieve to manage a dairy farm. It entails laying out the farm, producing dairy forage, feeding dairy animals, milking dairy animals, raising young stock, managing herd health, breeding the herd, formulating dairy feeds, designing farm structures and managing a dairy enterprise.

This qualification consists of the following basic and core competencies:

**BASIC COMPETENCIES**

|  |  |
| --- | --- |
| **UNIT CODE** | **UNIT NAME** |
| DA/OS/FM/BC/01/6/B | Demonstrate communication skills |
| DA/OS/FM/BC/02/6/B | Demonstrate numeracy skills |
| DA/OS/FM/BC/03/6/B | Demonstrate digital literacy |
| DA/OS/FM/BC/04/6/B | Demonstrate entrepreneurial skills |
| DA/OS/FM/BC/05/6/B | Demonstrate employability skills |
| DA/OS/FM/BC/06/6/B | Demonstrate environmental literacy |
| DA/OS/FM/BC/07/6/B | Demonstrate occupational safety and health practices |

**CORE COMPETENCIES**

| **UNIT CODE** | **UNIT NAME** |
| --- | --- |
| DA/OS/FM/CR/01/6/B | Layout dairy farm |
| DA/OS/FM/CR/02/6/B | Design farm structures |
| DA/OS/FM/CR/03/6/B | Produce dairy forage |
| DA/OS/FM/CR/04/6/B | Formulate dairy feed |
| DA/OS/FM/CR/05/6/B | Feed dairy animals |
| DA/OS/FM/CR/06/6/B | Breed dairy animals |
| DA/OS/FM/CR/07/6/B | Milk dairy animals |
| DA/OS/FM/CR/08/6/B | Manage dairy young stock |
| DA/OS/FM/CR/09/6/B | Manage dairy herd health |
| DA/OS/FM/CR/10/6/B | Manage dairy farm business |

# BASIC UNITS OF COMPETENCY

# DEMONSTRATE COMMUNICATION SKILLS

**UNIT CODE:** DA/OS/FM/BC/01/6/B

**UNIT DESCRIPTION**

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

**ELEMENTS AND PERFORMANCE CRITERIA**

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

**RANGE**

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

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

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Communication
* Active listening
* Interpretation
* Negotiation
* Writing

**Required Knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

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

# DEMONSTRATE NUMERACY SKILLS

**UNIT CODE:** DA/OS/FM/BC/02/6/B

**UNIT DESCRIPTION**

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

**ELEMENTS AND PERFORMANCE CRITERIA**

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

**RANGE**

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

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

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

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

**Required knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

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

**DEMONSTRATE DIGITAL LITERACY**

**UNIT CODE:** DA/OS/FM/BC/03/6/B

**UNIT DESCRIPTION**

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

**ELEMENTS AND PERFORMANCE CRITERIA**

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

**RANGE**

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

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

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

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

**Required Knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE** **GUIDE**

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

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

**DEMONSTRATE ENTREPRENEURIAL SKILLS**

**UNIT CODE :** DA/OS/FM/BC/04/6/B

**UNIT DESCRIPTION**

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

**ELEMENTS AND PERFORMANCE CRITERIA**

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

**RANGE**

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

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

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

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

**Required Knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

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

# DEMONSTRATE EMPLOYABILITY SKILLS

**UNIT CODE:** DA/OS/FM/BC/05/6/B

**UNIT DESCRIPTON**

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

**ELEMENTS AND PERFORMANCE CRITERIA**

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

**RANGE**

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

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

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

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

**Required Knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

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

# DEMONSTRATE ENVIRONMENTAL LITERACY

**UNIT CODE:** DA/OS/FM/BC/06/6/B

**UNIT DESCRIPTION**

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

**ELEMENTS AND PERFORMANCE CRITERIA**

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

**RANGE**

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

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

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

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

**Required Knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

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

# DEMONSTRATE OCCUPATIONAL SAFETY AND HEALTH PRACTICES

**UNIT CODE:** DA/OS/FM/BC/07/6/B

**UNIT DESCRIPTION**

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

**ELEMENTS AND PERFORMANCE CRITERIA**

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

**RANGE**

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

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

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

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

**Required Knowledge**

The individual needs to demonstrate knowledge of:

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

**EVIDENCE GUIDE**

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

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

# CORE UNITS OF COMPETENCY

# LAYOUT DAIRY FARM

**UNIT CODE:** DA/OS/FM/CR/01/6/B

**UNIT DESCRIPTION:**

This unit specifies the competencies required to layout a dairy farm. It involves applying food safety measures in selecting dairy enterprises, mapping them out, apportioning the farm, fencing off and documenting dairy farm layout plan.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Conduct food safety risk assessment to layout dairy farm | * 1. Hazard identification and documentation is conducted based on ***hazard* *type (s)*** andsource (s) of the identified dairy enterprise.   2. Identified hazard (s) are analyzed based on their likelihood and consequence (s)   3. Hazard evaluation is conducted based on the level of risk and prioritization   4. Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan.   5. Risk management plan is communicated as per policies for internal and external communication |
| 1. Prepare to layout dairy farm | * 1. ***Dairy enterprises*** are selected based on Agro Ecological Zones (AEZ) and market demand   2. Dairy enterprises layout plan is sketched based on code of hygienic practices for milk and milk products   3. Selected enterprises are allocated land based on their requirements, Livestock Production Manual and code of hygienic practices for milk and milk products   4. Required dairy infrastructure, power and water lines, contours, pathways are sited based on client’s specifications and Farm Management Handbook   5. Dairy enterprise land allocation is sketched based on the client’s specifications and enterprise requirements.   6. Required ***tools*** and ***equipment*** are identified and gathered based the requirements of the type of job.   7. Labour requirement is identified based on the job to be executed and occupational safety hazard.   8. Required ***materials*** and ***supplies*** are identified and procured based enterprises and workplace procurement policy   9. PPEs are identified and gathered based on requirements of the job.   10. Occupational safety and health procedures are adhered to according to work place procedures   11. Environmental protection measures are observed according to ***environment protection regulations*** and work place procedures |
| 1. Layout dairy farm plan | * 1. Identified labour is recruited based on job requirements.   2. Vegetation cleared based on the ground vegetation cover.   3. Area for each enterprise is measured and pegged based on the layout sketch.   4. ***Fences*** are erected based on type and layout sketch.   5. Dairy farm plan is laid out based on code of hygienic practices for milk and milk products and code of practice for the animal feed industry |
| 1. Evaluate dairy farm layout | * 1. Inclusion of all selected dairy enterprises is assessed based on the client’s specifications, market demand and layout sketch.   2. Faults are reported and rectified based on workplace policy and standard operating procedures   3. Satisfaction of the client is gauged based on job specifications |
| 1. Complete dairy farm plan layout | 1. Dairy farm layout is documented a based workplace policy. 2. Farm layout report is disseminated to relevant authority as per workplace policy. 3. Recyclable materials and supplies are stored as per manufacturer’s instructions. 4. Non-recyclable materials and supplies are disposed off in regard to environment protection regulations. |

**RANGE**

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

| **Variable** | **Range** | |
| --- | --- | --- |
| 1. Dairy farm enterprises include but not limited to: | * Forage production * Feed formulation * Dairy cattle production * Dairy goats production * Camel production | |
| 1. Hazard type (s) include but not limited to: | Chemical   * Pesticides * Noxious gases * Veterinary drugs * Herbicides * Fungicides * Paint * Preservatives * Detergents * Disinfectants * Mycotoxins   Biological   * Bacteria * Viruses * Fungi * Protozoa   Physical   * Broken metal * Broken glass * Wires * Sticks * Insects | |
| 1. Tools includes but not limited to: | * Slashers * Hammer * Crow bar | |
| 1. Equipment includes but not limited to: | * Wheelbarrow * Tape measure | |
| 1. Materials & Supplies includes but not limited to: | * Nails * Cement * Ballast | * Sand * Paint * Wood treatment chemicals |
| 1. PPE includes but not limited to: | * Overall * Gum boots * Helmet * Masks | |
| 1. Environment Protection Regulations includes but not limited to: | * Public Health Act * EMCA 1999 * OSH Act 2007 | |
| 1. Fences includes but not limited to: | * Live * Brick * Wire/chain link | |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required skills**

The individual needs to demonstrate the following skills:

* Food safety risk assessment and communication
* Training skills
* Measuring
* Masonry
* Carpentry
* computation
* Communication

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Gross margin analysis
* Hazard Analysis Critical Control Point (HACCP) process
* Code of hygienic practice (s)
* Dairy enterprise selection
* Farm planning
* Types of dairy farm structures
* Type of fences
* Types of fencing materials
* Environment Protection Regulations

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Conducted food safety risk assessment to layout dairy farm   2. Selected dairy enterprise according to the AEZ   3. Established dairy enterprise layout plan   4. Interpreted the layout plan accurately   5. All components of the plan included in the layout   6. Observed occupational safety and health measures in the working environment   7. Observed laid down environmental protection measures at the work place   8. Documented and maintained dairy farm and food safety records, |
| 1. Resource Implications | The following resources must be provided:   * 1. Assessment location / workplace   2. Personal Protective Equipment and Apparel |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Competency may be assessed 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 roles is recommended. |

# DEVELOP DAIRY FARM STRUCTURES

**UNIT CODE:** DA/OS/FM/CR/02/6/B

**UNIT DESCRIPTION:**

This unit specifies the competencies required to develop dairy Farm Structures. It involves applying food safety measures in determining structures to construct, designing, siting, sourcing of construction materials, constructing and maintaining dairy farm structures.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Conduct food safety risk assessment to develop dairy farm structures | * 1. Hazard identification and documentation is conducted based on ***hazard*** ***type (s)*** andsource (s)   2. Identified hazard (s) are analyzed based on their likelihood and consequence (s)   3. Hazard evaluation is conducted based on the level of risk and prioritization   4. Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan   5. Risk management plan is communicated as per policies for internal and external communication |
| 1. Prepare to construct dairy farm structure | 1. Farm structure to be constructed is determined in accordance with dairy enterprise and the farm production system. 2. Farm structure to be constructed is designed in accordance with the Livestock Production Manual. 3. ***Construction materials and supplies*** are sourced in accordance with procurement procedures. 4. Tools and equipment are identified and gathered based the requirements of the job. 5. PPEs are identified and gathered based on requirements of the job. 6. Occupational safety and health procedures are adhered to according to work place procedures 7. Environmental protection measures are observed according to ***environment protection regulations*** and work place procedures 8. Labour requirements is identified and recruited based on job to be executed. |
| 1. Construct dairy farm structure | * 1. Site is cleared based on vegetation on the ground and soil type.   2. Structure layout is measured and pegged based on design and the code of hygienic practices for milk and milk products.   3. Foundation is laid based on the type of structure.   4. Walls are erected based on the design and type of structure, the code of hygienic practices for milk and milk products and the code of practice for the animal feed industry   5. Roof is laid based on the design and type of structure, the code of hygienic practices for milk and milk products and the code of practice for the animal feed industry   6. Fittings are put in place based on design and type of enterprise, the code of hygienic practices for milk and milk products and the code of practice for the animal feed industry |
| 1. Evaluate dairy farm structure constructed | * 1. Faults detected are reported and rectified based on standards operating procedures.   2. Test run the structure based on the design and utility.   3. Satisfaction of the client is gauged based on job specifications and design. |
| 1. Complete dairy farm structure construction | * 1. Construction of structure is documented and report disseminated to relevant authority based on workplace policy.   2. Surplus materials and supplies are stored as per manufacturer’s instructions   3. Non-recyclable materials and supplies are disposed off in regard to environment protection regulations. |

**RANGE**

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

| **Variable** | **Range** | |
| --- | --- | --- |
| 1. Farm structure includes but not limited to: | * Milking Parlor * Zero grazing unit * Holding crush * Hay barn | * Fences * Trough * Spray race |
| 1. Hazard type (s) include but not limited to: | Chemical   * Pesticides * Noxious gases * Veterinary drugs * Herbicides * Fungicides * Paint * Preservatives * Detergents * Disinfectants * Mycotoxins   Biological   * Bacteria * Viruses * Fungi * Protozoa   Physical   * Broken metal * Broken glass * Wires * Sticks * Insects |  |
| 1. Dairy enterprise includes but not limited to: | * Forage production * Feed formulation * Dairy cattle production * Dairy goats production * Camel production | |
| 1. Construction materials includes but not limited to | * Timber * Poles * Nails * Iron sheets * Barbed wire | * Stones * Gravel * Sand * Cement |
| 1. Environment protection regulations includes but not limited to: | * Public Health Act * EMCA 1999 * OSH Act 2007 | |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required skills**

The individual needs to demonstrate the following skills

* Food safety risk assessment and communication
* Training skills
* Measuring skills
* Masonry skills
* Carpentry skills
* Communication skills
* Negotiation skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Dairy enterprises
* Dairy production systems
* Area calculation
* Types of dairy farm structures
* Types of construction materials
  + Mixing ratios
  + Making concrete
* Dairy structure maintenance
* Waste disposal
* Hazard Analysis Critical Control Point (HACCP) process
* Code of hygienic practice (s)
* Environment protection regulations
* Occupational safety and health Act

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Conducted food safety risk assessment to develop dairy farm structure   2. Interpreted layout plan and structural design accurately   3. Identified and donned correct PPEs.   4. Accurately determined job labor requirements.   5. Measured and pegged structure layout accurately   6. Completed the construction within the set timelines   7. Mixed construction materials in the recommended ratio.   8. Observed occupational safety and health measures in the working environment   9. Observed laid down environmental protection measures at the work place   10. Documented and maintained dairy farm and food safety records |
| 1. Resource Implications | The following resources **MUST** be provided:   * 1. Assessment location / workplace   2. Personal Protective Equipment and Apparel |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Competency may be assessed 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 roles is recommended. |

# PRODUCE DAIRY FORAGE

**UNIT CODE:** DA/OS/FM/CR/03/6/B

**UNIT DESCRIPTION:**

This unit specifies the competencies required to produce dairy forage. It involves applying food safety measures in land preparation and forage establishment, management and conservation.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Conduct food safety risk assessment to produce dairy forage | * 1. ***Forage*** to establish is determined in accordance with ***Agro Ecological Zone***, farm plan and market demand   2. Hazard identification is conducted based on ***hazard type (s)*** andsource (s)   3. Identified hazard (s) are analyzed based on their likelihood and consequence (s)   4. Hazard evaluation is conducted based on the level of risk and prioritization   5. Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan   6. Risk management plan is communicated as per policies for internal and external communication |
| 1. Prepare to produce dairy forage | 1. Planting land is prepared using correct ***farm tools, implements and machinery*** in accordance with the planting material 2. Soil for analysis is sampled as per sampling procedure 3. Planting materials are sourced in accordance with procurement procedure and laid down policies. 4. Amount of ***planting material*** and fertilizer is determined based on the acreage to be established and soil analysis report 5. Soil erosion is controlled based on topography, soil type and level of degradation. 6. PPEs are identified and gathered based on requirements of the job. 7. Occupational safety and health procedures are adhered to according to work place procedures 8. Environmental protection measures are observed according to ***environment protection regulations*** and work place procedures |
| 1. Produce dairy forage | * 1. Forage materials are planted as per Good Agricultural Practices (GAP) manual and livestock production manual   2. Planted materials is gapped as per spacing requirements   3. Weeds in forage are controlled as per GAP and the pest control products act (Cap 346)   4. Pests and diseases in forage are controlled following GAP and the pest control products act (Cap 346)   5. Planted forage is fertilized and irrigated as per soil conditions and based on ***livestock production manual***, fertilizer standards, fertilizer and animal foodstuffs Act 345 and guidelines for treated wastewater used for irrigation   6. Dairy forage is harvested in accordance with the livestock production manual |
| 1. Evaluate forage produced | * 1. Quality and safety of forage produced is assessed based on livestock production manual, code of practice for milk and milk products and code of hygienic practice for animal feed industry   2. ***Return on investment*** is determined as per accounting principles   3. Errors are reported and rectified as per workplace policy. |
| 1. Complete dairy forage production | 1. Dairy forage is conserved as per livestock production manual, forage type and code of hygienic practice for animal feed industry 2. Dairy forage is stored based on type of conserved forage and space available 3. Forage production is documented in accordance with farm procedures 4. Forage production report is prepared and disseminated to relevant authorities as per workplace policy. 5. Surplus materials and supplies are stored as per manufacturer’s instructions. 6. Waste is managed and disposed with due regard to environment protection regulations |

**RANGE**

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

|  |  |  |
| --- | --- | --- |
| **Variable** | **Range** | |
| 1. Forage includes but not limited to | * Pastures – Kikuyu, Rhodes, Star grass, Nandi Setaria * Fodder crops – Maize, Lucerne, Napier, Desmodium, Vetch | |
| 1. Agro Ecological Zone | Zones: I, II, III, IV, V, VI and VII | |
| 1. Planting materials includes but not limited to | * Seeds * Seedlings * Cuttings * Splits and * Tubers for propagation | |
| 1. Hazard type (s) include but not limited to: | Chemical   * Pesticides * Noxious gases * Veterinary drugs * Herbicides * Fungicides * Paint * Preservatives * Detergents * Disinfectants * Mycotoxins   Biological   * Bacteria * Viruses * Fungi * Protozoa   Physical   * Broken metal * Broken glass * Wires * Sticks * Insects | |
| 1. Farm tools include but not limited to: | * Hoe * Fork * Slasher * Sickle * Rake | |
| 1. Farm implements include but not limited to: | * Trailer * Plough * Harrow * Tiller * Planter | * Sprayer * Mower * Tedder * Baler * Forage harvester |
| 1. Farm machinery include but not limited to: | * Tractor * Lorry * Pickup | |
| 1. Environmental protection regulations include but limited to: | * Public Health Act Cap 242 * EMCA 1999 * OSH Act 2007 | |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required skills**

The individual needs to demonstrate the following skills:

* Food safety risk assessment and communication
* Training skills
* Measuring skills
* Agronomic skills
* Communication skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Agro ecological zoning
* Types of planting materials
* Primary and secondary cultivation
* Principles of forage establishment and management
  + Methods of planting
  + Weeds, poisonous plants, pests and diseases control methods
  + Irrigation methods
* Forage harvesting, conservation and value addition methods
* Hazard Analysis Critical Control Point (HACCP) process
* Code of hygienic practice (s)
* Occupational safety and health Act

**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. Conduct food safety risk assessment to produce dairy forage   2. Prepared planting land to a level suitable to the planting material   3. Established forage suitable for the AE zone   4. Managed and harvested forage according to guidelines in the livestock production manual   5. Assessed quality and safety of forage produced   6. Conserved and stored fodder using correct method and procedures   7. Observed occupational safety and health measures in the working environment   8. Observed laid down environmental protection measures at the work place   9. Documented and maintained dairy forage production and food safety records |
| 1. Resource Implications | The following resources must be provided:   * 1. Assessment location / workplace   2. Personal Protective Equipment and Apparel |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Competency may be assessed 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 roles is recommended. |

# BREED DAIRY ANIMALS

**UNIT CODE:** DA/OS/FM/CR/04/6/B

**UNIT DESCRIPTION:**

This unit specifies the competencies required to breed dairy animals. It involves dairy animal selection, identification, registration and reproductive management.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the keyoutcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Prepare to breed dairy animals | * 1. ***Healthy dairy animals*** are sourced and selected based on traits of economic importance and animal disease Act (Cap 364)   2. Breeding management ***tools, equipment, materials*** and ***supplies*** are identified and assembled based on livestock species in accordance with the livestock production manual   3. Labor for managing breeding activities is identified and allocated based on dairy enterprises requirements   4. Personal Protection Equipment and Apparel are identified and gathered based on job requirements   5. Occupational safety and health procedures are adhered to according to work place procedures   6. Environmental protection measures are observed according to ***environment protection regulations*** and work place procedures   7. Animal identification system is designed according to farm breeding procedures   8. Dairy animals are ***Identified*** in accordance with the Livestock Production Manual (LPM), animal welfare regulations and the code of practice for milk and milk products   9. Female animals on heat are detected based on LPM |
| 1. Breed dairy animals | * 1. Dairy animals on heat are ***served*** in accordance with the LPM   2. Parturiting animals are provided care based on the LPM |
| 1. Evaluate dairy breeding | * 1. Dairy animals are registered in accordance with regulations of relevant ***breeding organizations***   2. Genetic gain is estimated based on data from breeding organizations   3. Errors are reported and rectified as per workplace policy. |
| 1. Complete dairy animal breeding | * 1. Culling criteria are designed based on farm production objectives and work place policy   2. Dairy animals are culled based on culling criteria   3. ***Breeding data*** is recorded and maintained based on work place policy   4. Surplus Materials and supplies are stored as per manufacturer’s instructions.   5. Waste is managed and disposed off in due regard to environment protection regulations. |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Tools and equipment include but not limited to | Tools and equipment required for:   * Identification * Castration * Handling parturition * Weighing * Artificial insemination |
| 1. Materials and supplies include but not limited to | Supplies and materials required for:   * Cleaning * Disinfection * Artificial Insemination * Identification |
| 1. Healthy dairy animals include but not limited to: | * Disease free   + Brucellosis   + Tuberculosis * Free of abnormalities * Dairy Body conformation * Body condition score * Free of ecto and endo parasites * Free of injuries |
| 1. Identified includes but is not limited to | Marking or placing gadgets on animals that distinguish individual animals by;   * Ear tagging * Tattooing * Ear Notching * Electronic transponders * Branding |
| 1. Environmental protection regulations include but limited to: | * Public Health Act * EMCA 1999 * OSH Act 2007 |
| 1. Breeding organizations includes but is not limited to | National bodies charged with registration of dairy animals such as:   * Kenya Livestock Breeders Organization * Breed Associations * Livestock Recording Centre * Kenya Animal Genetics Resource Centre |
| 1. Breeding data includes but is not limited to | * Pedigree records * Performance records |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required skills**

The individual needs to demonstrate the following skills:

* Food safety risk assessment and communication
* Training skills
* Animal judging and scoring
* Heat detection
* Artificial insemination
* Animal handling
* Data handling
* Computer

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Traits of economic importance
* Methods of animal identification
* Animal health
* Animal behaviour
* Oestrus cycle
* Parturition process
* Animal anatomy and physiology
* Animal registration procedure
* Selection and culling methods
* Environment protection laws and regulations
* Waste management and disposal methods

**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. Sourced and selected healthy dairy animals   2. Estimated breeding value of dairy animals according to principles of animal breeding   3. Assigned identification marks for dairy animals following recommended procedures in the livestock breeding manual   4. Identified the correct time of oestrus to serve dairy animals   5. Followed right procedures of animal registration with relevant registration organization   6. Documented correct animal pedigree and performance data   7. Observed occupational safety and health measures in the working environment   8. Observed laid down environmental protection measures at the work place   9. Documented and maintained dairy breeding and food safety records |
| 1. Resource Implications | The following resources must be provided:   * 1. Assessment location / workplace   2. Personal Protective Equipment and Apparel |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Competency may be assessed 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 roles is recommended. |

# FORMULATE DAIRY FEED

**UNIT CODE:** DA/OS/FM/CR/05/6/B

**UNIT DESCRIPTION:**

This unit specifies the competencies required to formulate dairy feed. It involves applying food safety measures in determining feed ingredients to use; assessing ingredient quality; computing feed rations; processing and mixing ingredients; assessing ration quality; and packaging and storage.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Conduct food safety risk assessment to formulate dairy feed | * 1. Dairy feed to formulate is determined based on the dairy species and livestock classes.   2. Hazard identification is conducted based on ***hazard type (s)*** andsource (s)   3. Identified hazard (s) are analyzed based on their likelihood and consequence (s)   4. Hazard evaluation is conducted based on the level of risk and prioritization   5. Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan   6. Risk management plan is communicated as per policies for internal and external communication |
| 1. Prepare to formulate dairy feed | * 1. Feed formulation ***tools, equipment, materials*** and ***supplies*** are identified and assembled based on requirements of the job and feed formulation manual.   2. Labour for formulating dairy feed is identified and allocated based on dairy enterprises requirements.   3. Personal Protection Equipment and Apparel are identified and gathered based on job requirements.   4. Occupational safety and health procedures are adhered to according to work place procedures   5. Environmental protection measures are observed according to ***environment protection regulations*** and work place procedures   6. Feed formulation ***ingredients*** are selected and sourced based on cost, availability and nutritional values and standards for dairy cattle feeds   7. Ingredients are sampled for laboratory analysis according to ***sampling procedures***   8. Packaging materials are labelled as per ***feed manufacturing guidelines*** and standards for dairy cattle feeds |
| 1. Formulate dairy feed | * 1. Feed formulation method is selected based on available ingredients   2. Feed ration is formulated based on cost, feedstuff nutritional content, animal nutritional requirements, feed manufacturing guidelines and standards for dairy animal feeds.   3. Feed ingredients are prepared according to feed manufacturing guidelines and the code of practice for the animal feed industry.   4. Prepared feed ingredients are mixed as per feed manufacturing guidelines and the code of practice for the animal feed industry   5. Mixed ration is packaged as per feed manufacturing guidelines and the code of practice for the animal feed industry   6. Feed is stored in accordance with animal feed manufacturing guidelines |
| 1. Evaluate mixed feed | * 1. Mixed ration is sampled for evaluation according to sampling procedures   2. Quality and safety of mixed feed is assessed based on livestock production manual, code of practice for milk and milk products and code of hygienic practice for animal feed industry   3. Feed analysis results interpreted and applied during feeding according to the livestock production manual   4. Errors are reported and rectified based on workplace policy and feed formulation guidelines. |
| 1. Complete dairy feed formulation | * 1. Feed handling equipment and structures are cleaned in accordance with good manufacturing practices and work place policy   2. Feed formulation records are documented in accordance with work place policy   3. Feed formulation reports are disseminated to relevant authorities in accordance with work place policy   4. Reusable materials and supplies are stored based on the manufacturer’s instructions.   5. Non-recyclable waste materials are disposed off in due regard to environment protection regulations. |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Dairy species includes but not limited to | Livestock kept mainly for milk production:   * Cattle * Goats * Camels |
| 1. Livestock classes includes but not limited to | Livestock categories based on:   * Age * Weight * Physiological status |
| 1. Hazard type (s) include but not limited to: | Chemical   * Pesticides * Noxious gases * Veterinary drugs * Herbicides * Fungicides * Paint * Preservatives * Detergents * Disinfectants * Mycotoxins   Biological   * Bacteria * Viruses * Fungi * Protozoa   Physical   * Broken metal * Broken glass * Wires * Sticks * Insects |
| 1. Tools and equipment includes but not limited to | Tools and equipment required for:   * Feed sampling * Feed processing * Feed mixing * Packaging and labelling * Weighing |
| 1. Materials and supplies include but not limited to | Supplies and materials required for:   * Packaging * Cleaning |
| 1. Environmental protection regulations include but limited to: | * Public Health Act * EMCA 1999 * OSH Act 2007 |
| 1. Ingredients includes but not limited to | * Feedstuff * Additives |
| 1. Sampling procedures includes but not limited to | * Random sampling * Systematic sampling * Purposive sampling |
| 1. Feed manufacturing guidelines includes but not limited to | Animal feed regulatory authorities’ specifications on;   * Manufacturing procedures * Nutrient content * Processing procedures * Mixing procedures * Ingredient inclusion levels * Labeling * Storage |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required skills**

The individual needs to demonstrate the following skills:

* Food safety risk assessment and communication
* Training skills
* Sampling
* Judging
* Computation
* Computer
* Mixing

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Species of dairy livestock
* Dairy animal gross anatomy and basic physiology
* Dairy animal nutrient requirements
* Hazard Analysis Critical Control Point (HACCP) process
* Animal behaviour
* Types of nutrients
* Feed classification
* Nutrient content of feedstuff
* Methods of feed formulation
* Animal feed processing procedures
* Feed mixing methods
* Guidelines of feed manufacturing

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Conducted food safety risk assessment to feed formulation process   2. Identified the right feeds for particular livestock classes   3. Formulated feed ration that meets nutritional requirements for intended class of livestock   4. Feed stuff prepared in correct form of presentation   5. Feed ingredients are thoroughly mixed   6. Assessed quality and safety of mixed animal feed   7. Feed packaged and stored as recommended   8. Labeled feed packages correctly   9. Adhered to occupational safety and health procedures   10. Observed laid down environmental protection measures at the work place   11. Documented and maintained dairy feed formulation and food safety records |
| 1. Resource Implications | The following resources must be provided:   * 1. Assessment location / workplace   2. Personal Protective Equipment and Apparel |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Competency may be assessed 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 roles is recommended. |

# FEEDING DAIRY ANIMALS

**UNIT CODE:** DA/OS/FM/CR/06/6/B

**UNIT DESCRIPTION:**

This unit specifies the competencies required to feed dairy animals. It involves applying food safety measures in selecting suitable dairy production system, grouping animals into classes, mixing the ration, applying the right feeding system and documentation of feeding.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Conduct food safety risk assessment to feed dairy animals | * 1. Hazard identification is conducted based on ***hazard type (s)*** andsource (s)   2. Identified hazard (s) are analyzed based on their likelihood and consequence (s)   3. Hazard evaluation is conducted based on the level of risk and prioritization   4. Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan   5. Risk management plan is communicated as per policies for internal and external communication |
| 1. Prepare to feed dairy animals | * 1. ***Dairy production system*** is selected based on AEZ, available resources and farm production objectives   2. Nutritional requirements of diary animals are determined based on productivity, sex and physiological status   3. ***Dairy animals*** are grouped based on their nutritional requirements age, sex and physiological status   4. ***Feeding system*** is determined based on cost and farm size.   5. ***Feed safety assessment*** is carried out in accordance with the requirements of the code of practice in animal feed industry   6. ***Feed materials and supplies*** are identified based of nutritional requirements, in accordance with procurement procedures and farm policy.   7. Required ***tools*** and ***equipment*** are identified and gathered based the requirements of the job.   8. PPEs are identified and gathered based on requirements of the job.   9. Occupational safety and health procedures are adhered to according to work place procedures   10. Environmental protection measures are observed according to ***environment protection regulations*** and work place procedures   11. Labour requirements are identified based on job to be executed   12. Labour is recruited based on selected feeding system and size of enterprise.   13. Feed materials are sourced based on nutritional requirements and production system. |
| 1. Feed dairy animals | * 1. Feed materials are prepared based on feeding system.   2. Rations for different dairy classes are mixed according to nutritional requirements   3. Dairy animals are fed based on their nutritional requirements, in accordance with dairy feeding manual. |
| 1. Evaluate dairy animal feeding | * 1. Feed intake is evaluated based on palatability, form and physiological status   2. Feed conversion efficiency is evaluated based on growth rate and productivity   3. Errors are reported and rectified as per workplace policy. |
| 1. Complete dairy animal feeding | * 1. Feeding regime is documented as per workplace policy   2. Dairy animal feeding report is disseminated to relevant authorities based on workplace policy.   3. Feeding materials and supplies not consumed are stored as per manufacturer’s instructions.   4. Wasteis disposed off based on type, in regard to environment protection regulations. |

**RANGE**

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

|  |  |  |
| --- | --- | --- |
| **Variable** | **Range** | |
| 1. Dairy production system includes but not limited to | * Extensive * Intensive * Semi-intensive * Ranch * Irrigation * Pastoral * Permanent housing approaches | |
| 1. Dairy animals include but not limited to | * Dairy cattle * Dairy goats and * Camels | |
| 1. Feed safety assessment includes but not limited to: | * Inspection and control procedures * Feed safety control and testing * Physical inspection | |
| 1. Feed materials and supplies includes but not limited to: | * Napier grass * Fodder maize * Lucerne * Salt lick | * Dairy meal * Hay * Silage * Feed additives - molasses |
| 1. Hazard type (s) include but not limited to: | Chemical   * Pesticides * Noxious gases * Veterinary drugs * Herbicides * Fungicides * Paint * Preservatives * Detergents * Disinfectants * Mycotoxins   Biological   * Bacteria * Viruses * Fungi * Protozoa   Physical   * Broken metal * Broken glass * Wires * Sticks * Insects |  |
| 1. Environment protection regulations includes but not limited to: | * Public Health Act * EMCA 1999 * OSH Act 2007 |  |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required skills**

The individual needs to demonstrate the following skills:

* Food safety risk assessment and communication
* Training skills
* Weighing skills
* Animal handling skills
* Feed mixing skills
* Data handling skills
* Computer skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Dairy animal breeds
* Animal production systems
* Agro-Ecological Zones
* Types of feeding systems and strategies
* Nutritional requirements of dairy animals
  + Growth
  + Body maintenance
  + Reproduction
  + Production
* Feed conversions
* Nutritional composition of feed materials
* Poisonous plants
* Dairy animal feed intake
* Hazard Analysis Critical Control Point (HACCP) process
* Feed mixer operations
* Principles of animal nutrition
* Types of costs in feeding dairy animals
* Production functions
* Profit maximization
* Labour laws

**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. Conduct food safety risk assessment to feed dairy animals   2. Determined dairy animal nutritional requirements   3. Grouped dairy animals correctly   4. Provided required quality and quantity of feed ration to meet animal’s daily requirements   5. Carried out feed safety assessment   6. Determined labour requirements accurately   7. Determined dairy animal’s feed conversion efficiency   8. Observed occupational safety and health measures in the working environment   9. Observed laid down environmental protection measures at the work place   10. Documented and maintained dairy feeding regime and food safety records. |
| 1. Resource Implications | The following resources must be provided:   * 1. Assessment location / workplace   2. Personal Protective Equipment and Apparel |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Competency may be assessed 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 roles is recommended. |

# MILKING DAIRY ANIMALS

**UNIT CODE:** DA/OS/FM/CR/07/6/B

**UNIT DESCRIPTION:**

This unit specifies the competencies required to milk dairy animals. It involves applying food safety measures in pre-milking preparations; actual milking; post milking activities; and documentation of milk production.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Conduct food safety risk assessment to milk dairy animals | * 1. Hazard identification is conducted based on ***hazard type (s)*** andsource (s)   2. Identified hazard (s) are analyzed based on their likelihood and consequence (s)   3. Hazard evaluation is conducted based on the level of risk and prioritization   4. Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan   5. Risk management plan is communicated as per policies for internal and external communication |
| 1. Prepare to milk dairy animals | 1. ***Milking tools and equipment*** are assembled based on the milking method and species of dairy animal. 2. ***Milking materials*** and ***supplies*** are assembled based on the milking method and the code of hygienic practice for milk and milk products 3. ***Milking animals*** are assembled in accordance with livestock production manual. 4. PPEs are identified and gathered based on requirements of the job. 5. Occupational safety and health procedures are adhered to according to work place procedures 6. Environmental protection measures are observed according to ***environment protection regulations*** and work place procedures 7. Labor requirements are identified based on job to be executed and code of hygienic practice for milk and milk products 8. Labor is recruited based on selected milking system and size of enterprise. |
| 1. Milk dairy animals | * 1. Milking animals are restrained according to animal welfare regulations   2. Udder is prepared according to the livestock production manual and the code of hygienic practice for milk and milk products.   3. Milking animals are tested for mastitis infection according to the code of hygienic practice for milk and milk products.   4. Milking animals are milked based on method of milking as per livestock production manual and the code of hygienic practice for milk and milk products.   5. Milked animal’s udder quarters are disinfected as per livestock production manual and the code of hygienic practice for milk and milk products   6. Milk is weighed and sieved in accordance with livestock production manual and the code of hygienic practice for milk and milk products.   7. Milk is stored and cooled based on the livestock production manual and the code of hygienic practice for milk and milk products.   8. ***Milking equipment*** are cleaned and stored as per standard operating procedures and the code of hygienic practice for milk and milk products   9. Milking parlour is cleaned as per livestock production manual and workplace policy and the code of hygienic practice for milk and milk products. |
| 1. Evaluate dairy animal milking | * 1. ***Average time taken to milk*** is determined based on livestock production manual.   2. Cleanliness of milk, milk parlor and equipment is assessed based on code of hygienic practice for milk and milk products and workplace policy.   3. Faults and errors are reported and rectified based on workplace policy |
| 1. Complete dairy animal milking | * 1. Milking is documented according to livestock production manual and work place policy   2. Reusable materials and supplies are stored as manufacturer’s instructions manual and workplace policy.   3. Waste is disposed off in regard to environment protection regulations. |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Dairy animals include but not limited to | * Dairy cattle * Dairy goats * camels |
| 1. Milking materials and supplies includes but not limited to | * Milking salve * Udder clothes * Portable water |
| 1. Hazard type (s) include but not limited to: | Chemical   * Pesticides * Noxious gases * Veterinary drugs * Herbicides * Fungicides * Paint * Preservatives * Detergents * Disinfectants * Mycotoxins   Biological   * Bacteria * Viruses * Fungi * Protozoa   Physical   * Broken metal * Broken glass * Wires * Sticks * Insects |
| 1. Environment protection regulations includes but not limited to: | * Public Health Act * EMCA 1999 * OSH Act 2007 |
| 1. Milking equipment includes but not limited to | * Milking buckets * Milking machine * Sieve * Cans * Mastitis test kit * Strip cup |
| 1. Average time taken to milk includes but not limited to: | * 7 to 10 minutes |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required skills**

The individual needs to demonstrate the following skills:

* Food safety risk assessment and communication
* Training skills
* Weighing
* Animal handling and restraint
* Milking technique
* Cleaning
* Communication

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Methods of milking
* Milk let down
* Hygienic milk production
* Hazard Analysis Critical Control Point (HACCP) process
* Code of hygienic practice (s)
* Mastitis management
* Udder health
* Types of disinfectants
* Milking machine operation and maintenance
* Animal welfare
* Occupational safety and health Act
* Documentation
* 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. Conducted food safety risk assessment to milk dairy animals   2. Restrained the milking animal   3. Tested milking animal for mastitis before milking   4. Disinfected udder after milking   5. Used correct milking techniques   6. Operated milking machine in accordance with user’s manual   7. Adhered to occupational safety and health procedures   8. Observed laid down environmental protection measures at the work place   9. Documented and maintained milking and food safety records |
| 1. Resource Implications | The following resources must be provided:   * 1. Assessment location / workplace   2. Personal Protective Equipment and Apparel |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Competency may be assessed 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 roles is recommended. |

# MANAGEMENT OF DAIRY YOUNG STOCK

**UNIT CODE:** DA/OS/FM/CR/08/6/B

**UNIT DESCRIPTION:**

This unit specifies the competencies required to manage dairy young stock. It involves steaming up, parturition handling, feeding, identification, housing, weaning and routine management activities for young stock.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Prepare to manage dairy young stock | * 1. ***Young stock*** management ***tools, equipment, materials*** and ***supplies*** are identified and assembled based on livestock species in accordance with the livestock production manual   2. Structures for managing young stock are identified and prepared in accordance with the livestock production manual   3. Labour for managing young stock is identified and allocated based on dairy enterprises requirements   4. Personal Protection Equipment and Apparel are identified and gathered based on job requirements   5. Occupational safety and health procedures are adhered to according to work place procedures   6. Environmental protection measures are observed according to ***environment protection regulations*** and work place procedures   7. Additional nutrition is provided to dams within the last trimester of gestation livestock production manual (LPM)   8. ***Female animals*** showing signs of imminent parturition are identified and separated according to the livestock production manual   9. Dams with difficult parturition are identified and assisted according to the livestock production manual |
| 1. Manage dairy young stock | * 1. Neonates handled at birth according to instructions in the LPM   2. Neonate is fed adequate amounts of colostrum according to the LPM   3. Young stock is ***identified*** using suitable method in accordance with LPM, animal welfare regulations and work place policy   4. Young stock is housed based on production system, prevailing climatic conditions and age within LPM standards   5. Young stock is introduced to roughage feeding in accordance with LPM   6. Young stock is debudded and extra mammary teats removed in accordance with animal welfare regulations and work place policy   7. Young stock ***disease management*** is conducted based on animal disease Act (Cap 364) |
| 1. Evaluate management of dairy young stock | * 1. Young stock is weighed in accordance with LPM instructions and work place policy   2. Young stock growth rate is monitored in accordance with principles of animal nutrition and breeding   3. Errors are reported and rectified based on workplace policy and LPM |
| 1. Complete management of dairy young stock | * 1. Young stock is weaned in accordance with the LPM   2. Surplus materials and supplies are stored as per manufacturer’s instructions.   3. Waste is managed and disposed with due regard to ***environment protection regulations.*** |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Young Stock includes but not limited to: | Offspring of the following between birth and weaning:   * Cattle * Goats * Camels |
| 1. Tools and equipment includes but not limited to | Tools and equipment required for:   * Identification * Castration * Disbudding / dehorning * Hoof trimming * Young stock handling * Weighing |
| 1. Materials and supplies include but not limited to | * Feed – milk replacers, pellets, pencils, mineral supplements * Dewormers * Cleaning materials |
| 1. Environment protection regulations includes but not limited to: | * Public Health Act * EMCA 1999 * OSH Act 2007 |
| 1. Female animals include but not limited to | Females of:   * Cattle * Goats * Camels |
| 1. Neonate includes but not limited to | The young ones at birth of the following:   * Cattle * Goats * Camels |
| 1. Disease management includes but not limited to: | * Vaccination * Disinfection * Quarantine * Isolation * Culling * Nutrition * Treatment * Disposal * Slaughtering |
| 1. Identified includes but not limited to | Markings or gadgets on animals for purposes of distinguishing individual animals:   * Ear tagging * Tattooing * Ear Notching * Electronic transponders * Branding |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required skills**

The individual needs to demonstrate the following skills:

* Food safety risk assessment and communication
* Training skills
* Animal handling
* Farm equipment operation skills
* Animal health applied skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Animal nutritional requirements
* Immunology
* Animal gross anatomy and basic physiology
* Animal health care
* Disease management
* Reproductive cycle
* Methods of animal identification
* Animal growth rate
* Animal welfare

**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 females showing signs of imminent parturition   2. Identified females requiring assistance to parturite   3. Implemented recommended young stock feeding regime   4. Weaned young stock using right procedure at correct age and body weight   5. Conducted disease management on young stock   6. Observed occupational safety and health measures in the working environment   7. Observed laid down environmental protection measures at the work place |
| 1. Resource Implications | The following resources must be provided:   * 1. Assessment location / workplace   2. Personal Protective Equipment and Apparel |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Competency may be assessed 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 roles is recommended. |

# MANAGEMENT OF DAIRY HERD HEALTH

**UNIT CODE:** DA/OS/FM/CR/09/6/B

**UNIT DESCRIPTION:**

This unit specifies the competencies required to manage dairy herd health. It involves applying food safety measures in farm biosecurity, parasite control, vaccination, disease control and animal grooming.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Conduct food safety risk assessment to manage dairy herd health | * 1. Hazard identification is conducted based on ***hazard type (s)*** andsource (s)   2. Identified hazard (s) are analyzed based on their likelihood and consequence (s)   3. Hazard evaluation is conducted based on the level of risk and prioritization   4. Hazard control or treatment is applied based on prerequisite programmes, operational prerequisite programmes and HACCP plan   5. Risk management plan is communicated as per policies for internal and external communication |
| 1. Prepare to manage dairy herd health | * 1. ***Biosecurity measures*** are designed according to regulations of regulatory bodies (NEMA, KVB) and work place policy   2. Herd health management ***tools, equipment, materials*** and ***supplies*** are identified and assembled based on livestock species in accordance with the livestock production manual   3. Structures for herd health maintenance are identified and prepared in accordance with the livestock production manual and code of hygienic practices for milk and milk products   4. Labour for managing herd health is identified and allocated based on dairy enterprises requirements and biosecurity design   5. Personal Protection Equipment and Apparel are identified and gathered based on job requirements and the code of hygienic practices for milk and milk products   6. Occupational safety and health procedures are adhered to according to work place procedures   7. Environmental protection measures are observed according to ***environment protection regulations*** and work place procedures |
| 1. Manage dairy herd health | * 1. Biosecurity measures are implemented based on design in accordance with ***public health regulations***   2. Endo and ecto parasites are controlled in dairy herds in accordance with the livestock production manual (LPM)   3.3 Dairy herd vaccination schedule is designed based on local area veterinary reports and Animal disease Act (Cap 364)   * 1. Dairy herd ***vaccination schedule*** is implemented in accordance with permitted animal health procedures and practices and Animal Disease Act (Cap 364)   2. Animals showing signs of ill health are identified and attended to according to animal health care procedures, Kenya Veterinary Board (KVB) regulations and Animal Disease Act (Cap 364)   3. Overgrown ***dairy animal*** hooves are trimmed as per the LPM and animal welfare regulations   4. Overgrown dairy animal horns cut as per the LPM and animal welfare regulations   5. Dairy animals are ***groomed*** according to the LPM and work place policy |
| 1. Evaluate management of dairy herd health | * 1. Prevalence of dairy herd parasites and diseases is reviewed as per provisions of Animal Disease Act (Cap 364) and workplace policy   2. Parasite and disease control measures are redesigned based on review reports and Animal Disease Act (Cap 364)   3. Errors are detected, reported and rectified based on workplace policy and LPM |
| 1. Complete management of dairy herd health | 1. Herd health management practices are documented in accordance with work place policy and Animal Disease Act (Cap 364) 2. Herd health management reports are disseminated to relevant authorities in accordance with work place policy 3. Surplus materials and supplies are stored as per manufacturer’s instructions. 4. Waste is managed and disposed with due regard to environment protection regulations |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Tools and equipment include but not limited to: | Tools and equipment required for:   * Deworming * Spraying and dipping * Vaccination * Hoof trimming * Disbudding / dehorning * Grooming * Weighing * Land clearing, cleaning and disinfection |
| 1. Materials and supplies include but not limited to | Supplies and materials required for:   * Dewormers * Acaricides * Vaccines * Cleaning and disinfection |
| 1. Dairy animals include but not limited to | Livestock kept mainly for milk production:   * Cattle * Goats * Camels |
| 1. Biosecurity measures includes but not limited to: | * Foot baths * Tyre baths * Isolation pens/paddocks * Fencing * Disinfection/fumigation * Parasite and pest control * Proper disposal of dead animals |
| 1. Hazard type (s) include but not limited to: | Chemical   * Pesticides * Veterinary drugs * Herbicides * Fungicides * Paint * Preservatives * Detergents * Disinfectants * Mycotoxins   Biological   * Bacteria * Viruses * Fungi * Protozoa   Physical   * Broken metal * Broken glass * Wires * Sticks * Insects |
| 1. Environment protection regulations includes but not limited to: | * Public Health Act * EMCA 1999 * OSH Act 2007 |
| 1. Public health regulations include but not limited to | Guidelines designed and enforced by:   * National Environmental Management Authority * Kenya Veterinary Board * Ministry of Health |
| 1. Groom includes but not limited to | * Brushing * Washing * Clipping coat hair |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required skills**

The individual needs to demonstrate the following skills:

* Food safety risk assessment and communication
* Training skills
* Animal handling
* Handling animal feeds and supplements
* Animal grooming
* Farm equipment operation skills
* Farm records keeping
* Animal health applied skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Types of dairy animal diseases and parasites
* Mode of disease and parasite spread
* Biosecurity measures
* Animal Immunology
* Animal nutrition
* Animal gross anatomy and basic physiology
* Animal welfare
* Methods of hoof trimming and dehorning
* Animal health care
* Grooming procedures
* 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. Conducted food safety risk assessment to manage dairy herd health   2. Implemented biosecurity measures   3. Controlled internal and external parasites   4. Implemented vaccination schedule   5. Used correct procedure to trim hooves and dehorn dairy animals   6. Observed occupational safety and health measures in the working environment   7. Observed laid down environmental protection measures at the work place   8. Documented and maintained dairy herd health and food safety records. |
| 1. Resource Implications | The following resources must be provided:   * 1. Assessment location / workplace   2. Personal Protective Equipment and Apparel |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Competency may be assessed 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 roles is recommended. |

# MANAGEMENT OF DAIRY FARM BUSINESS

**UNIT CODE:** DA/OS/FM/CR/10/6/B

**UNIT DESCRIPTION**

This unit specifies the competencies required to manage a dairy farm business. It involves planning, controlling, coordinating, organizing, directing and documenting dairy farm business. It applies in the Agricultural Sector.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the range.*** |
| 1. Prepare to manage Dairy farm business | * 1. Strategic plan is prepared in accordance with the business environment assessment report.   2. Business plan is developed based on strategic plan.   3. Annual implementation plan is developed based on strategic and business plans.   4. ***Food safety risk management plan*** is developed based on risk assessment carried out   5. Annual budget is prepared based on the annual implementation plan.   6. Financial (cash flow) plan is prepared based on the annual implementation plan.   7. ***Dairy business activities*** are identified and classified based on dairy enterprises.   8. Annual work plan is prepared according to dairy farm business activities.   9. Procurement plan is prepared based on dairy farm activities resources requirements.   10. ***Dairy farm resources*** are identified and gathered based on selected dairy enterprise and work place policy.   11. Information Management System is identified based on standard management principles. |
| 2. Manage dairy Farm business | * 1. Resources are procured based on the procurement procedures and workplace policy.   2. Labour is recruited and organized based on the workplace policy and selected dairy enterprises.   3. Dairy business duties are assigned and allocated resources based on dairy enterprise and work place policy   4. Authority to run dairy business activities is delegated based on dairy enterprise and work place policy   5. Dairy business activities are coordinated based on standard management principles and workplace policy   6. Utilization of finances is controlled based on management accounting principles.   7. Dairy business activities are directed based workplace policy and selected dairy.   8. Food safety risk management plan is implemented based on risk assessment carried out |
| 3. Evaluate management of dairy Farm business | * 1. Dairy business activities are monitored and evaluated based on strategic plan and dairy farm business objectives.   2. Errors are detected, reported and rectified based on workplace policy |
| 4. Complete dairy Farm business | 4.1 Dairy business management records are maintained according to work place policy   * 1. Dairy business management activities are documented in accordance to work place policy   2. Dairy business management reports are disseminated to the relevant authority in accordance with workplace policy   3. Surplus materials and supplies are stored as per manufacturer’s instructions.   4. Waste is managed and disposed with due regard to environment protection regulations |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Budget includes but not limited to: | * Partial * Complete * Enterprise |
| 1. Resources includes but not limited to: | * Labour * Capital * Land * Management Information System |
| 1. Food safety risk management plan include but not limited to: | * Process flow diagrams * Food safety team * Hazards * Controls of hazards * Critical limits for each hazards * Monitoring procedures * Frequency of monitoring * Monitoring and measuring equipment * Responsibility * Records to be maintained * Resources needed * Verification planning * HACCP plan |
| 1. Dairy business activities include but not limited to | * Breeding heifer * Milk production * Forage/fodder/hay/silage production * Market research |
| 1. Evaluation includes but not limited to | * Formative * Summative * Continuous |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required skills**

The individual needs to demonstrate the following skills:

* Food safety risk assessment and communication
* Training skills
* Communication
* Negotiation
* Controlling
* Decision making

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Strategic planning
* Management functions
* Food safety management plan
* Risk assessment
* Hazard Analysis Critical Control Point (HACCP) process
* Resource allocation
* Financial management
* Human resource management
* Labour laws and regulations
* Public Safety and Security
* Sales and Marketing
* Procurement regulations

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Prepared a strategic plan   2. Developed a viable business plan   3. Prepared annual budget   4. Developed food safety risk management plan   5. Prepared a financial plan   6. Prepared annual work plan   7. Prepared annual procurement plan   8. Monitored and evaluated farm activities   9. Implemented food safety risk management plan |
| 1. Resource Implications | The following resources must be provided:   * 1. Assessment location / workplace   2. Personal Protective Equipment and Apparel |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Written test   4. Portfolio of Evidence   5. Interview   6. Third party report |
| 1. Context of Assessment | Competency may be assessed 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 roles is recommended. |