****

**REPUBLIC OF KENYA**

**COMPETENCY BASED CURRICULUM**

**FOR**

**DAIRY FARM MANAGEMENT**

**LEVEL 5**

 

 TVET CDACC

 P.O. BOX 15745-00100

 NAIROBI

First published 2019

Copyright ©TVET CDACC

All rights reserved. No part of this curriculum 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

# 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 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 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 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 this curriculum has been developed.

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

**PRINCIPAL SECRETARY, VOCATIONAL AND TECHNICAL TRAINING**

**MINISTRY OF EDUCATION**

# PREFACE

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

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

TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) in conjunction with Dairy Sector Skills Advisory Committee (SSAC), German International Cooperation and Ministry of Agriculture, Livestock and Fisheries have developed this curriculum. TVET CDACC in conjunction with Micro Enterprises Support Programme Trust (MESPT) have reviewed this curriculum and incorporated Food Safety.

This curriculum has been developed following the CBET framework policy; the CBETA standards and guidelines provided by the TVET Authority and the Kenya National Qualification Framework designed by the Kenya National Qualification Authority.

This curriculum is designed and organized with an outline of learning outcomes; suggested delivery methods, training/learning resources and methods of assessing the trainee’s achievement. The curriculum is competency-based and allows multiple entry and exit to the course.

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 this curriculum.

**CHAIRPERSON, TVET CDACC**

# ACKNOWLEDGMENT

This curriculum has been designed for competency-based training and has independent units of learning that allow the trainee flexibility in entry and exit. In developing the curriculum, significant involvement and support was received from various organisations.

I appreciate 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 this curriculum 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 Curriculum. I acknowledge the Danish International Development Agency (DANIDA) and the European Union (EU) who sponsored the review process.

I recognize with appreciation the role of the Dairy and Food Safety Sector Skills Advisory Committee (SSAC) in ensuring that competencies required by the industry are addressed in the curriculum. I also thank all stakeholders in the Agriculture sector for their valuable input and all those who participated in the process of developing this curriculum.

I am convinced that this curriculum will go a long way in ensuring that workers in Dairy Farm Management acquire competencies that will enable them to perform their work more efficiently.

**COUNCIL SECRETARY/CEO**

**TVET CDACC**ACRONYMS

ATVET Agricultural Technical and Vocational Education and Training

BC Basic Competency

CAADP Comprehensive Africa Agricultural Development Programme

CBET Competency Based Education and Training

CDACC Curriculum Development Assessment and Certification Council

CR Core Competency

CU Curriculum

DA Dairy

DANIDA Danish International Development Agency

FM Farm Management

KCSE Kenya Certificate of Secondary Education

KNQA Kenya National Qualifications Authority

MESPT Micro Enterprises Support Programme Trust

MoALF Ministry of Agriculture Livestock and Fisheries

PPE Personal Protective Equipment

SSAC Sector Skills Advisory Committee

TVET Technical and Vocational Education and Training

Contents

[FOREWORD iii](#_Toc66614584)

[PREFACE iv](#_Toc66614585)

[ACKNOWLEDGMENT v](#_Toc66614586)

[KEY TO UNIT CODE viii](#_Toc66614587)

[COURSE OVERVIEW ix](#_Toc66614588)

[BASIC UNITS OF LEARNING 1](#_Toc66614589)

[COMMUNICATION SKILLS 2](#_Toc66614590)

[NUMERACY SKILLS 5](#_Toc66614591)

[DIGITAL LITERACY 11](#_Toc66614592)

[ENTREPRENEURIAL SKILLS 14](#_Toc66614593)

[EMPLOYABILITY SKILLS 18](#_Toc66614594)

[ENVIRONMENTAL LITERACY 23](#_Toc66614595)

[OCCUPATIONAL SAFETY AND HEALTH PRACTICES 27](#_Toc66614596)

[CORE UNITS OF LEARNING 30](#_Toc66614597)

[DAIRY FARM STRUCTURES DEVELOPMENT 31](#_Toc66614598)

[DAIRY FORAGE PRODUCTION 36](#_Toc66614599)

[DAIRY ANIMALS BREEDING 41](#_Toc66614600)

[DAIRY FEED FORMULATION 45](#_Toc66614601)

[DAIRY ANIMALS FEEDING 50](#_Toc66614602)

[DAIRY ANIMALS MILKING 54](#_Toc66614603)

[DAIRY YOUNG STOCK REARING 58](#_Toc66614604)

[DAIRY HERD HEALTH MAINTENANCE 62](#_Toc66614605)

# KEY TO UNIT CODE

 **DA /CU/FM/BC/CR/01/ 5/B**

Industry or sector

Curriculum

Occupational area

Type of competency

Competency number

Competency level

Version control

# COURSE OVERVIEW

This course is designed to equip individuals with competencies for supervision of dairy farm operations. It entails developing and maintaining dairy farm structures; producing dairy forage; formulating dairy feed; feeding, milking and breeding dairy animals; raising young stock; and maintaining dairy herd health.

This course consists of the following basic and core units of learning:

**Basic Units of Learning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit Code** | **Unit Title** | **Duration in Hours** | **Credit factors**  |
| DA/CU/FM/BC/01/5/B | Communication skills | 25 | 2.5 |
| DA/CU/FM/BC/02/5/B | Numeracy skills | 40 | 4 |
| DA/CU/FM/BC/03/5/B | Digital literacy | 45 | 4.5 |
| DA/CU/FM/BC/04/5/B | Entrepreneurial skills | 70 | 7 |
| DA/CU/FM/BC/05/5/B | Employability skills | 50 | 5 |
| DA/CU/FM/BC/06/5/B | Environmental literacy | 25 | 2.5 |
| DA/CU/FM/BC/07/5/B | Occupational safety and health practices | 25 | 2.5 |
| **Total** | **280** | **28** |

**Core** **Units of Learning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit Code** | **Unit Title** | **Duration in Hours** | **Credit factor** |
| DA/CU/FM/CR/01/5/B | Dairy farm structures development | 100 | 10 |
| DA/CU/FM/CR/02/5/B | Dairy forage production | 130 | 13 |
| DA/CU/FM/CR/03/5/B | Dairy animals breeding | 70 | 7 |
| DA/CU/FM/CR/04/5/B | Dairy feed formulation | 100 | 10 |
| DA/CU/FM/CR/05/5/B | Dairy animals feeding | 130 | 13 |
| DA/CU/FM/CR/06/5/B | Dairy animals milking | 70 | 7 |
| DA/CU/FM/CR/07/5/B | Dairy young stock rearing | 100 | 10 |
| DA/CU/FM/CR/08/5/B | Dairy herd health maintenance  | 110 | 11 |
|  | Industrial attachment | 360 | 36 |
| **Total** | **1170** | **117** |
| **Grand total**  | **1450** | **145** |

The total duration of the course for an average trainee is 1450 hours which is equivalent to 49 weeks at 30 hours of learning per week including 12 weeks of field attachment.

**Entry Requirements**

An individual entering this course should have any of the following minimum requirements:

1. Kenya Certificate of Secondary Education (KCSE) mean grade D (plain)

**Or**

1. Artisan Certificate in Dairy Farm Management Level 4

**Or**

1. Equivalent qualifications as determined by Kenya National Qualifications Authority (KNQA)

**Field attachment**

An individual enrolled in this course will undergo a field attachment for a period of 10 weeks in a dairy production farm.

**Assessment**

The course will be assessed at two levels:

1. **Internal assessment**: conducted continuously by the trainer (internal assessor) who is monitored by an accredited internal verifier
2. **External assessment:** conducted by an accredited external assessor who is monitored by an accredited external verifier

The assessors and verifiers are accredited by TVET CDACC which also coordinates external assessment.

**Trainer qualification**

A trainer for this course should have a higher qualification than the level of this course

**Certification**

An individual will be awarded a Record of Achievement on demonstration of competence in a unit of competency. To be awarded Certificate in Dairy Farm Management Level 5, an individual must demonstrate competence in all the units of competency.

These certificates will be awarded by TVET CDACC in conjunction with the training provider.

# BASIC UNITS OF LEARNING

# COMMUNICATION SKILLS

**UNIT CODE: DA**/CU/FM/BC/01/5/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Communication Skills

**Duration of Unit:** 25hours

**Unit Description**

This unit covers the competencies required to demonstrate communication skills. It involves meeting communication needs of clients and colleagues, contributing to the development of communication strategies, conducting workplace interviews, facilitating group discussions and representing the organisation.

**Summary of Learning Outcomes**

1. Meet communication needs of clients and colleagues
2. Contribute to the development of communication strategies
3. Conduct interviews
4. Facilitate group discussions
5. Represent the organization

**Learning Outcomes, Content and Methods of assessment**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment**  |
| 1. Meet communication needs of clients and colleagues
 | * Communication process
* Modes of communication
* Medium of communication
* Effective communication
* Barriers to communication
* Flow of communication
* Sources of information
* Organizational policies
* Organization requirements for written and electronic communication methods
* Report writing
* Effective questioning techniques (clarifying and probing)
* Workplace etiquette
* Ethical work practices in handling communication
* Active listening
* Feedback
* Interpretation
* Flexibility in communication
 | * Interview
* Third party reports
* Written texts
 |
| 1. Contribute to the development of communication strategies
 | * Dynamics of groups
* Styles of group leadership
* Openness and flexibility in communication
* Communication skills relevant to client groups
 | * Written
* Observation
 |
| 1. Conduct interviews
 | * Types of interview
* Establishing rapport
* Facilitating resolution of issues
* Developing action plans
 | * Written
* Observation
 |
| 1. Facilitate group discussions
 | * Identification of communication needs
* Dynamics of groups
* Styles of group leadership
* Presentation of information
* Encouraging group members participation
* Evaluating group communication strategies
 | * Written
* Observation
 |
| 1. Represent the organization
 | * Presentation techniques
* Development of a presentation
* Multi-media utilization in presentation
* Communication skills relevant to client groups
 | * Observation
* Written
 |

**Suggested Methods of Instruction**

* Role playing
* Viewing of related videos

**Recommended Resources**

* Desktop computers/laptops
* Internet connection
* Projectors
* Telephone

# NUMERACY SKILLS

**UNIT CODE:** DA/CU/FM/BC/02/5/B

**Relationship to Occupational Standards:**

This unit addresses the Unit of Competency: Demonstrate Numeracy Skills

**Duration of Unit:** 40 hours

**Unit Description**

This unit covers the competencies required to demonstrate numeracy skills. It involves calculating with whole numbers and familiar fractions, decimals, and percentages for work estimating, measuring, and calculating with routine metric measurements for work, using routine maps and plans for work, interpreting, drawing and constructing 2D and 3D shapes for work, interpreting routine tables, graphs and charts for work, collecting data and constructing routine tables and graphs for work and using basic functions of calculator

**Summary of Learning Outcomes**

1. Calculate with whole numbers and familiar fractions, decimals and percentages for work
2. Estimate, measure and calculate with routine metric measurements for work
3. Use routine maps and plans for work
4. Interpret, draw and construct 2D and 3D shapes for work
5. Interpret routine tables, graphs and charts for work
6. Collect data and construct routine tables and graphs for work
7. Use basic functions of calculator

**Learning Outcomes, Content and Methods of assessment**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment**  |
| 1. Calculate with whole numbers and familiar fractions, decimals and percentages for work
 | * Interpretation of whole numbers, fractions, decimals, percentages and rates
* Calculations involving several steps
* Calculation with whole numbers and routine or familiar fractions, decimals and percentages
* Conversion between equivalent forms of fractions, decimals and percentages
* Application of order of operations to solve multi-step calculations
* Application of problem solving strategies
* Making estimations to check reasonableness of problem solving process, outcome and its appropriateness to the context and task
* Use of formal and informal mathematical language and symbolism to communicate the result of a task
 | * Written
* Practical test
* Observation
 |
| 1. Estimate, measure and calculate with routine metric measurements for work
 | * Selection and interpretation of measurement information in workplace tasks and texts
* Identification and selection of routine measuring equipment
* Estimation and making measurements using correct units
* Estimation and calculation using routine measurements
* Performing conversions between routinely used metric units
* Using problem solving processes to undertake tasks
* Recording information using mathematical language and symbols
 | * Written
* Practical test
* Observation
 |
| 1. Use routine maps and plans for work
 | * Identification of features in routine maps and plans
* Symbols and keys used in routine maps and plans
* Identification and interpretation of orientation of map to North
* Demonstrate understanding of direction and location
* Apply simple scale to estimate length of objects, or distance to location or object
* Give and receive directions using both formal and informal language
 | * Written
* Practical test
* Observation
 |
| 1. Interpret, draw and construct 2D and 3D shapes for work
 | * Identify two dimensional shapes and routine three-dimensional shapes in everyday objects and in different orientations
* Explain the use and application of shapes
* Use formal and informal mathematical language and symbols to describe and compare the features of two-dimensional shapes and routine three-dimensional shapes
* Identify common angles
* Estimate common angles in everyday objects
* Use formal and informal mathematical language to describe and compare common angles
* Use common geometric instruments to draw two dimensional shapes
* Construct routine three-dimensional objects from given nets
 |  • Written• Practical test• Observation |
| 1. Interpret routine tables, graphs and charts for work
 | * Identify routine tables, graphs and charts in predominately familiar texts and contexts
* Identify common types of graphs and their different uses
* Identify features of tables, graphs and charts
* Locate specific information
* Perform calculations to interpret information
* Explain how statistics can inform and persuade
* Identify misleading statistical information
* Discuss information relevant to the workplace
 | * Oral
* Written
* Practical test
* Observation
 |
| 1. Collect data and construct routine tables and graphs for work
 | * Identify features of common tables and graphs
* Identify uses of **different tables and graphs**
* Determine data and variables to be collected
* Determine audience
* Select a method to collect data
* Collect data
* Collate information in a table
* Determine suitable scale and axes
* Draft and draw graph to present information
* Check that data meets the expected results and context
* Report or discuss information using formal and informal mathematical language
 | * Written
* Practical test
* Observation
 |
| 1. Use basic functions of calculator
 | * Identify and use keys for basic functions on a calculator
* Calculate using whole numbers, money and routine decimals and percentages
* Calculate with routine fractions and percentages
* Apply order of operations to solve multi-step calculations
* Interpret display and record result
* Make estimations to check reasonableness of problem solving process, outcome and its appropriateness to the context and task
* Use formal and informal mathematical language and appropriate symbolism and conventions to communicate the result of the task
 | * Written
* Practical test
* Observation
 |

**Suggested Methods of Instruction**

* Demonstrations
* Role playing
* Viewing of related videos
* Discussion
* Assignments

**Recommended resources**

* Calculators
* Basic measuring instruments

# DIGITAL LITERACY

**UNIT CODE:** DA/CU/FM/BC/03/5/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Digital Literacy

**Duration of Unit:** 45 hours

**Unit Description**

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

**Summary of Learning Outcomes**

1. Identify computer software and hardware
2. Apply security measures to data, hardware, software in automated environment
3. Apply computer software in solving tasks
4. Apply internet and email in communication at workplace
5. Apply desktop publishing in official assignments
6. Prepare presentation packages

**Learning Outcomes, Content and Methods of assessment**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment**  |
| 1. Identify computer hardware and software
 | * Concepts of ICT
* Functions of ICT
* History of computers
* Components of a computer
* Classification of computers
 | * Written tests
* Oral presentation
* Observation
 |
| 1. Apply security measures to data, hardware and software
 | * Data security and control
* Security threats and control measures
* Types of computer crimes
* Detection and protection against computer crimes
* Laws governing protection of ICT
 | * Written tests
* Oral presentation
* Observation
* Project
 |
| 1. Apply computer software in solving tasks
 | * Operating system
* Word processing
* Spread sheets
* Data base design and manipulation
* Data manipulation, storage and retrieval
 | * Oral questioning
* Observation
* Project
 |
| 1. Apply internet and email in communication at workplace
 | * Computer networks
* Network configurations
* Uses of internet
* Electronic mail (e-mail) concept
 | * Oral questioning
* Observation
* Oral presentation
* Written report
 |
| 1. Apply desktop publishing in official assignments
 | * Concept of desktop publishing
* Opening publication window
* Identifying different tools and tool bars
* Determining page layout
* Opening, saving and closing files
* Drawing various shapes using DTP
* Using colour pellets to enhance a document
* Inserting text frames
* Importing and exporting text
* Object linking and embedding
* Designing of various publications
* Printing of various publications
 | * Oral questioning
* Observation
* Oral presentation
* Written report
* Project
 |
| 1. Prepare presentation packages
 | * Types of presentation packages
* Procedure of creating slides
* Formatting slides
* Presentation of slides
* Procedure for editing objects
 | * Oral questioning
* Observation
* Oral presentation
* Written report
* Project
 |

**Suggested Methods of Instruction**

* Demonstration
* Viewing of related videos
* Discussions
* Assignments
* Direct instructions

**Recommended Resources**

* Computers
* Other digital devices
* Printers
* Storage devices
* Internet access
* Computer software

# ENTREPRENEURIAL SKILLS

**UNIT CODE:** DA/CU/FM/BC/04/5/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Entrepreneurship

**Duration of unit:** 70 hours

**Unit Description**

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

**Summary of Learning Outcomes**

* 1. Demonstrate understanding of an entrepreneur
	2. Demonstrate knowledge of entrepreneurship and self-employment
	3. Identify entrepreneurship opportunities
	4. Create entrepreneurial awareness
	5. Apply entrepreneurial motivation
	6. Develop innovative business strategies
	7. Develop Business plan

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment**  |
| 1. Demonstrate knowledge of entrepreneurship and self-employment
 | * Importance of self-employment
* Requirements for entry into self-employment
* Role of an Entrepreneur in business
* Contributions of Entrepreneurs to National development
* Entrepreneurship culture in Kenya
* Born or made entrepreneurs
 | * Individual/group assignments
* Projects
* Written tests
* Oral questions
* Third party report
* Interviews
 |
| 1. Identify entrepreneurship opportunities
 | * Business ideas and opportunities
* Sources of business ideas
* Business life cycle
* Legal aspects of business
* Assessment of product demand
* Business environment
* Factors to consider when evaluating business environment
* Technology in business
 | * Individual/group assignments
* Projects
* Written tests
* Oral questions
* Third party report
* Interviews
 |
| 1. Create entrepreneurial awareness
 | * Forms of businesses
* Sources of business finance
* Factors in selecting source of business finance
* Governing policies on Small Scale Enterprises (SSEs)
* Problems of starting and operating SSEs
 | * Individual/group assignments
* Projects
* Written tests
* Oral questions
* Third party report
* Interviews
 |
| 1. Apply entrepreneurial motivation
 | * Internal and external motivation
* Motivational theories
* Self-assessment
* Entrepreneurial orientation
* Effective communications in entrepreneurship
* Principles of communication
* Entrepreneurial motivation
 | * Case studies
* Individual/group assignments
* Projects
* Written tests
* Oral questions
* Third party report
* Interviews
 |
| 1. Develop business innovative strategies
 | * Innovation in business
* Small business Strategic Plan
* Creativity in business development
* Linkages with other entrepreneurs
* ICT in business growth and development
 | * Case studies
* Individual/group assignments
* Projects
* Written tests
* Oral questions
* Third party report
* Interviews
 |
| 1. Develop Business Plan
 | * Business description
* Marketing plan
* Organizational/Management
* plan
* Production/operation plan
* Financial plan
* Executive summary
* Presentation of Business Plan
 | * Case studies
* Individual/group assignments
* Projects
* Written tests
* Oral questions
* Third party report
* Interviews
 |

**Suggested Methods of instruction**

* Direct instruction
* Project
* Case studies
* Field trips
* Discussions
* Demonstration
* Question and answer
* Problem solving
* Experiential
* Team training

**Recommended Resources**

* Case studies
* Business plan templates
* Computers
* Overhead projectors
* Internet
* Mobile phone
* Video clips
* Films
* Newspapers and Handouts
* Business Journals
* Writing materials

# EMPLOYABILITY SKILLS

**UNIT CODE:** DA/CU/FM/BC/05/5/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Employability Skills

**Duration of Unit:** 50 hours

**Unit Description**

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 workplace ethics.

**Summary of Learning Outcomes**

1. Conduct self-management

2. Demonstrate interpersonal communication

3. Demonstrate critical safe work habits

4. Lead small teams

5. Plan and organize work

6. Maintain professional growth and development

7. Demonstrate workplace learning

8. Demonstrate problem solving skills

9. Demonstrate workplace ethics

**Learning Outcomes, Content and Methods of assessment**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment**  |
| 1. Conduct self-management
 | 1. Self-awareness
2. Formulating personal vision, mission and goals
3. Strategies for overcoming life challenges
4. Emotional intelligence
5. Assertiveness versus aggressiveness
6. Expressing personal thoughts, feelings and beliefs
7. Developing and maintaining high self-esteem
8. Developing and maintaining positive self-image
9. Articulating ideas and aspirations
10. Accountability and responsibility
11. Good work habits
12. Self-awareness
13. Self-development
14. Financial literacy
15. Healthy lifestyle practices
 | 1. Written tests
2. Oral questioning
3. Interviewing
4. Portfolio of evidence
5. Third party report
 |
| 1. Demonstrate interpersonal communication
 | 1. Meaning of interpersonal communication
2. Listening skills
3. Types of audience
4. Writing skills
5. Reading skills
6. Meaning of empathy
7. Understanding customers’ needs
8. Establishing communication networks
9. Sharing information
 | 1. Written tests
2. Oral questioning
3. Interviewing
4. Portfolio of evidence
5. Third party report
 |
| 1. Demonstrate critical safe work habits
 | 1. Stress and stress management
2. Punctuality and time consciousness
3. Leisure
4. Integratingpersonal objectives into organizational objectives
5. Resources utilization
6. Setting work priorities
7. HIV and AIDS
8. Drug and substance abuse
9. Handling emerging issues
 | 1. Written tests
2. Oral questioning
3. Interviewing
4. Portfolio of evidence
5. Third party report
 |
| 1. Lead a small team
 | 1. Leadership qualities
2. Team building
3. Determination of team roles and objectives
4. Team performance indicators
5. Responsibilities in a team
6. Forms of communication
7. Complementing team activities
8. Gender and gender mainstreaming
9. Human rights
10. Maintaining relationships
11. Conflicts and conflict resolution
 | 1. Written tests
2. Oral questioning
3. Interviewing
4. Portfolio of evidence
5. Third party report
 |
| 1. Plan and organize work
 | 1. Functions of management
* Planning
* Organizing
1. Time management
2. Decision making process
3. Task allocation
4. Evaluating work activities
5. Resource utilization
6. Problem solving
7. Collecting and organising information
 | 1. Written tests
2. Oral questioning
3. Interviewing
4. Portfolio of evidence
5. Third party report
 |
| 1. Maintain professional growth and development
 | 1. Opportunities for professional growth
2. Assessing training needs
3. Licenses and certifications for professional growth and development
4. Pursuing personal and organizational goals
5. Identifying work priorities
6. Recognizing career advancement
 | 1. Written tests
2. Oral questioning
3. Interviewing
4. Portfolio of evidence
5. Third party report
 |
| 1. Demonstrate workplace learning
 | 1. Managing own learning
2. Contributing to the learning community at the workplace
3. Cultural aspects of work
4. Variety of learning context
5. Application of learning
6. Safe use of technology
7. Identifying opportunities
8. Generating new ideas
9. Workplace innovation
10. Performance improvement
11. Handling emerging issues
12. Future trends and concerns in learning
 | 1. Written tests
2. Oral questioning
3. Interviewing
4. Portfolio of evidence
5. Third party report
 |
| 1. Demonstrate problem solving skills
 | 1. Problem identification
2. Problem solving
3. Application of problem-solving strategies
4. Resolving customer concerns
 | 1. Written tests
2. Oral questioning
3. Interviewing
4. Portfolio of evidence
5. Third party report
 |
| 1. Demonstrate workplace ethics
 | 1. Meaning of ethics
2. Ethical perspectives
3. Principles of ethics
4. Values and beliefs
5. Ethical standards
6. Organization code of ethics
7. Common ethical dilemmas
8. Organization culture
9. Corruption, bribery and conflict of interest
10. Privacy and data protection
11. Diversity, harassment and mutual respect
12. Financial responsibility/accountability
13. Etiquette
14. Personal and professional integrity
15. Commitment to jurisdictional laws
16. Emerging issues in ethics
 | 1. Written tests
2. Oral questioning
3. Interviewing
4. Portfolio of evidence
5. Third party report
 |

**Suggested Methods of Instruction**

1. Demonstrations
2. Simulation/Role play
3. Discussion
4. Presentations
5. Case studies
6. Q&A

**Recommended Resources**

1. Computers
2. Stationery
3. Charts
4. Video clips
5. Audio tapes
6. Radio sets
7. TV sets
8. LCD projectors

# ENVIRONMENTAL LITERACY

**UNIT CODE:** DA/CU/FM/BC/06/5/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Environmental Literacy

**Duration of Unit:** 25 hours

**Unit Description**

This unit describes the competencies required to demonstrate understanding of environmental literacy. It involves controlling environmental hazard, controlling control environmental pollution, complying with workplace sustainable resource use, evaluating current practices in relation to resource usage, identifying environmental legislations/conventions for environmental concerns, implementing specific environmental programs and monitoring activities on environmental protection/programs.

**Summary of Learning Outcomes**

1. Control environmental hazards
2. Control environmental Pollution
3. Demonstrate sustainable use of resource
4. Evaluate current practices in relation to resource usage
5. Identify Environmental legislations/conventions for environmental concerns
6. Implement specific environmental programs
7. Monitor activities on Environmental protection/Programs

**Learning Outcomes, Content and Methods of assessment**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** |  **Content** | **Methods of assessment**  |
| 1. Control environmental hazards
 | * Purposes and content of Environmental Management and Coordination Act 1999
* Purposes and content of Solid Waste Act
* Storage methods for environmentally hazardous materials
* Disposal methods of hazardous wastes
* Types and uses of PPE in line with environmental regulations
* Occupational Safety and Health Standards (OSHS)
 | * Written test
* Oral questions
* Observation
 |
| 1. Control environmental Pollution control
 | * Types of pollution
* Environmental pollution control measures
* Types of solid wastes
* Procedures for solid waste management
* Different types of noise pollution
* Methods for minimizing noise pollution
 | * Written test
* Oral questions
* Observation
 |
| 1. Demonstrate sustainable resource use
 | * Types of resources
* Techniques in measuring current usage of resources
* Calculating current usage of resources
* Methods for minimizing wastage
* Waste management procedures
* Principles of 3Rs (Reduce, Reuse, Recycle)
* Methods for economizing or reducing resource consumption
 | * Written test
* Oral questions
* Observation
 |
| 1. Evaluate current practices in relation to resource usage
 | * Collection of information on environmental and resource efficiency systems and procedures,
* Measurement and recording of current resource usage
* Analysis and recording of current purchasing strategies.
* Analysis of current work processes to access information and data
* Identification of areas for improvement
 | * Written test
* Oral questions
* Observation
 |
| 1. Identify Environmental legislations/conventions for environmental concerns
 | * Environmental issues/concerns
* Environmental legislations /conventions and local ordinances
* Industrial standard /environmental practices
* International Environmental Protocols (Montreal, Kyoto)
* Features of an environmental strategy
 | * Written questions
* Oral questions
* Observation
 |
| 1. Implement specific environmental programs
 | * Community needs and expectations
* Resource availability
* 5 s of good housekeeping
* Identification of programs/Activities
* Setting of individual roles /responsibilities
* Resolving problems /constraints encountered
* Consultation with stakeholders
 | * Written questions
* Oral questions
* Observation
 |
| 1. Monitor activities on Environmental protection/Programs
 | * Periodic monitoring and Evaluation of activities
* Gathering feedback from stakeholders
* Analysing data gathered
* Documentation of recommendations and submission
* Setting of management support systems to sustain and enhance the program
* Monitoring and reporting of environmental incidents to concerned /proper authorities
 | * Oral questions
* Written tests
* Practical test
* Observation
 |

**Suggested Methods of Instruction**

* Instructor led facilitation of theory
* Demonstration by trainer
* Viewing of related videos
* Project
* Assignements
* Role play

**Recommended Resources**

* Standard operating and/or other workplace procedures manuals
* Specific job procedures manuals
* Environmental Management and Coordination Act 1999
* Machine/equipment manufacturer’s specifications and instructions
* Personal Protective Equipment (PPE)
* ISO standards
* Ccompany environmental management systems (EMS)
* Montreal Protocol
* Kyoto Protocol

# OCCUPATIONAL SAFETY AND HEALTH PRACTICES

**UNIT CODE:** **DA**/CU/FM/BC/07/5/B

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Demonstrate occupational safety and health practices

**Duration of Unit:** 25 hours

**Unit Description**

This unit specifies the competencies required to identify workplace hazards and risk, identify and implement appropriate control measures and implement OSH programs, procedures and policies/ guidelines

**Summary of Learning Outcomes**

1. Identify workplace hazards and risk
2. Control OSH hazards
3. Implement OSH programs

**Learning Outcomes, Content and Methods of assessment**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment**  |
| 1. Identify workplace hazards and risks
 | * Identification of hazards in the workplace and/or the indicators of their presence
* Evaluation and/or work environment measurements of OSH hazards/risk existing in the workplace is conducted by
* Authorized personnel or agency
* Gathering of OHS issues and/or concerns raised
 | * Oral questions
* Written tests
* Portfolio of evidence
* Third party report
 |
| 1. Control OSH hazards
 | * Prevention and control measures, including use of PPE (personal protective equipment) for specific hazards are identified and implemented
* Appropriate risk controls based on result of OSH hazard evaluation is recommended
* Contingency measures, including emergency procedures during workplace incidents and emergencies are recognized and established in accordance with organization procedures
 | * Oral questions
* Written tests
* Portfolio of evidence
* Third party report
 |
| 1. Implement OSH programs
 | * Providing information to work team about company OHS program, procedures and policies/guidelines
* Participating in implementation of OSH procedures and policies/ guidelines
* Training of team members and advice on OSH standards and procedures
* Implementation of procedures for maintaining OSH-related records
 | * Oral questions
* Written tests
* Portfolio of evidence
* Third party report
 |

**Suggested Methods of Instruction**

* Assigments
* Discussion
* Q&A
* Role play
* Viewing of related videos

**Recommended Resources**

* Standard operating and/or other workplace procedures manuals
* Specific job procedures manuals
* Machine/equipment manufacturer’s specifications and instructions
* Personal Protective Equipment (PPE) e.g.
* Mask
* Face mask/shield
* Safety boots
* Safety harness
* 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

# CORE UNITS OF LEARNING

# DAIRY FARM STRUCTURES DEVELOPMENT

**UNIT CODE:** DA/CU/FM/CR/01/5/B

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Develop dairy farm structures

**Duration of Unit:** 96 hours

**Unit Description**

This unit specifies the competencies required to supervise development of dairy farm structures. It involves applying food safety measures in participating in the determination of structures to construct, designing, siting, sourcing of construction materials, constructing and maintaining dairy farm structures.

**Summary of Learning Outcomes**

1. Carry out food safety risk assessment to develop dairy farm structures
2. Prepare to develop dairy farm structures
3. Develop dairy farm structures
4. Evaluate development of dairy farm structures
5. Complete development of dairy farm structures

**Learning Outcomes, Content and Methods of assessment**

| **Learning Outcome** | **Content** | **Methods of assessment**  |
| --- | --- | --- |
| 1. Carry out food safety risk assessment to develop dairy farm structures
 | * Meaning of food safety
* Importance of food safety
* Principles of food safety
* Prerequisite programmes
	+ Meaning, importance, categories and establishment of prerequisite programmes
	+ Relevant programmes
		- Good agricultural practices
		- Good manufacturing practices
		- Standard Sanitary Operating Procedures
* Hazard analysis
	+ Enterprise description - Layout of premises and surrounding environment
	+ Product description
	+ Methods of distribution and storage of product
	+ Intended uses and consumers
	+ Developing flow diagram
	+ Identification of hazards at each step of the flow diagram
	+ Describing the hazard
	+ Significance of hazards
* Establishment of the HACCP plan
	+ Identifying critical control points
	+ Procedures of setting up critical control limits
	+ Establishment of monitoring procedures on the control limits
	+ Establishment of corrective actions
	+ Verification and validation procedures
	+ Record keeping
* Standards and legislations on developing dairy farm structures
	+ Code of hygienic practices for milk and milk products
	+ Code of practice for the animal feed industry
	+ Dairy Industry Act (Cap 336)
	+ Environmental Management and Coordination Act (EMCA)
 | * Written tests
* Oral questioning
* Observation
* Case study
 |
| 1. Prepare to develop dairy farm structures
 | * Types of farm structures
	+ Milking parlour
	+ Cattle sheds
	+ Zero grazing unit
	+ Calf pens
	+ Hay barn
	+ Silos
	+ Holding crush
	+ Spray race
	+ Plunge dip
	+ Stores
	+ Watering troughs
	+ Feeding troughs
	+ Fences
* Structure designs
* Technical drawing
* Types of dairy enterprises
* Dairy production systems
	+ Intensive
	+ Semi-intensive
	+ Extensive/free range
* Factors considered in siting farm structure
* Factors considered in selection of tools &equipment
* Factors considered in selection of construction material & supplies
* Sources of construction materials
* Procurement procedures
* Labour laws
* Human resource management
* Occupational Safety and Health standards.
 | * Written tests
* Observation
* Oral questions
* Third party report
* Interviewing
 |
| 1. Develop dairy farm structures
 | * Area measurement
* Methods of bush clearing
* Drawing and design
* Structure siting
* Mixing ratios of mortar
* Stone laying
* Barbed wire/chain link laying
* Pole fixing
* Types of roofs
* Components of dairy farm structures
 | * Observation
* Written tests
* Oral questions
* Interviewing
 |
| 1. Evaluate development of dairy farm structures
 | * + Structure inspection
	+ Dairy machine operations
	+ Dairy farm structure strength tests
	+ Maintenance of dairy farm structures
	+ Customer care
 | * Observation
* Written tests
* Oral questions
* Interviewing
 |
| 1. Complete development of dairy farm structures
 | * + Documentation
	+ Farm records
	+ Type of materials
 | * Observation
* Written tests
* Oral questions
* Interviewing
 |

**Suggested Methods of Instruction**

* Demonstration by trainer
* Practice by the trainee
* Field trips
* Discussions
* Direct instruction

**Recommended Resources**

|  |
| --- |
| **Functional dairy farm with the following:** |
| * Tractors
* Trailer
* Slashers
* Crowbar
* Hammer
* Nails
* Saw
 | * Barbed/chain link Poles
* Stones
* Sand
* Cement
* Ballast
* Tape measures
 | * Metal bars
* Land
* Live fence planting materials
* Hoe
 |

#  DAIRY FORAGE PRODUCTION

**UNIT CODE:** DA/CU/FM/CR/02/5/B

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Produce dairy forage

**Duration of Unit:** 128 hours

**Unit Description**

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

**Summary of Learning Outcomes**

1. Carry out food safety risk assessment to produce dairy forage.
2. Prepare to produce dairy forage
3. Produce dairy forage
4. Evaluate dairy forage production
5. Complete dairy forage production

**Learning Outcomes, Content and Methods of assessment**

| **Learning Outcome** | **Content** | **Methods of assessment**  |
| --- | --- | --- |
| 1. Carry out food safety risk assessment to produce dairy forage
 | * Meaning of food safety
* Importance of food safety
* Principles of food safety
* Prerequisite programmes
	+ Meaning, importance, categories and establishment of prerequisite programmes
	+ Relevant programmes
		- Good agricultural practices
		- Good manufacturing practices
		- Standard Sanitary Operating Procedures
* Hazard analysis
	+ Enterprise description - Layout of premises and surrounding environment
	+ Product description
	+ Methods of distribution and storage of product
	+ Intended uses and consumers
	+ Developing flow diagram
	+ Identification of hazards at each step of the flow diagram
	+ Describing the hazard
	+ Significance of hazards
* Establishment of the HACCP plan
	+ Identifying critical control points
	+ Procedures of setting up critical control limits
	+ Establishment of monitoring procedures on the control limits
	+ Establishment of corrective actions
	+ Verification and validation procedures
	+ Record keeping
* Standards and legislations on producing dairy forage
	+ Code of hygienic practices for milk and milk products
	+ Code of practice for animal feed industry
	+ Public health regulations
	+ KEPHIS Act 2012
	+ Dairy Industry Act (Cap 336)
	+ Environmental Management and Coordination Act (EMCA)
	+ Pest control product Act
	+ Fertilizer standards
	+ Guidelines for treated waste water for irrigation
 | * Written tests
* Oral questioning
* Observation
* Case study
 |
| 1. Prepare to produce dairy forage
 | * Agro Ecological zonation
	+ Zone mapping
	+ Matching forage to zones
* Determination of Market Demands
* Farm planning
* Soil conservation
* Methods of land preparation
* Soil sampling
* Planting materials
	+ Types
	+ Sources
	+ Preparation
 | * Written tests
* Observation
* Oral questions
* Third party report
* Interviewing
 |
| 1. Produce dairy forage
 | * Forage types
	+ Pasture
	+ Fodder crops
	+ Multi-purpose trees
* Forage planting methods
* Seed rates
* Gapping
* Pest, weed and disease control
	+ Types
	+ Control methods
* Fertilizer application
	+ Types of fertilizer
	+ Application rates and methods
	+ Time
* Irrigation methods
	+ Overhead
	+ Furrow / canal
	+ Drip
* Forage harvesting
	+ Stage
	+ Methods
 | * Observation
* Written tests
* Oral questions
* Product analysis
* Interviewing
 |
| 1. Evaluate forage production
 | * Forage judging
* Forage quantity forecasting
* Returns on investment calculations
 | * Observation
* Written tests
* Oral questions
* Product analysis
* Interviewing
 |
| 1. Complete dairy forage production
 | * Forage conservation methods
	+ Hay making
	+ Silage making
* Forage storage
* Documentation
	+ Reports
	+ Records
 | * Observation
* Written tests
* Oral questions
* Interviewing
 |

**Suggested Methods of Instruction**

* Project
* Demonstration by trainer
* Practice by the trainee
* Field trips
* Discussions
* Direct instruction

**Recommended Resources**

|  |
| --- |
| **Functional dairy farm with the following:** |
| * Tractors
* Land
* Trailer
* Ploughs
* Harrows
* Tillers
* Sprayers
* Rakes
* Tedders
 | * Mowers
* Forage choppers / chaff cutters
* Balers
* Forage harvesters
* Hammer mills
* Molasses
* Silage silos
* Forage planting materials
 | * Hay barn
* Farm tools (Hoe, fork, rake, panga, shovel and watering cans)
* Polythene sheets and tubes
* Baling twines
* Forage box
 |

# DAIRY ANIMALS BREEDING

**UNIT CODE:** DA/CU/FM/CR/03/5/B

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Breed dairy animals

**Duration of Unit:** 64 hours

**Unit Description**

This unit specifies the competencies required to supervise breeding of dairy animals. It involves applying food safety measures in participating in dairy animal selection, identification, registration and reproductive management.

**Summary of Learning Outcomes**

1. Carry out food safety risk assessment to breed dairy animals
2. Prepare to breed dairy animals
3. Breed dairy animals
4. Evaluate dairy animal breeding
5. Complete dairy animal breeding

**Learning Outcomes, Content and Methods of assessment**

| **Learning Outcome** | **Content** | **Methods of assessment**  |
| --- | --- | --- |
| 1. Carry out food safety risk assessment to breed dairy animals
 | * Meaning of food safety
* Importance of food safety
* Principles of food safety
* Prerequisite programmes
	+ Meaning, importance, categories and establishment of prerequisite programmes
	+ Relevant programmes
		- Good agricultural practices
		- Good manufacturing practices
		- Standard Sanitary Operating Procedures
* Hazard analysis
	+ Enterprise description - Layout of premises and surrounding environment
	+ Product description
	+ Methods of distribution and storage of product
	+ Intended uses and consumers
	+ Developing flow diagram
	+ Identification of hazards at each step of the flow diagram
	+ Describing the hazard
	+ Significance of hazards
* Establishment of the HACCP plan
	+ Identifying critical control points
	+ Procedures of setting up critical control limits procedures
	+ Establishment of monitoring procedures on the control limits
	+ Establishment of corrective actions
	+ Verification and validation procedures
	+ Record keeping
* Standards and legislations on breeding dairy animals
	+ Public health regulations
	+ Animal Disease Act
	+ Animal Breeding Act 2001
 | * Written tests
* Oral questioning
* Observation
* Case study
 |
| 1. Prepare to breed dairy animals
 | * Dairy animal breeds
* Selection methods
	+ Tandem
	+ Independent culling
	+ Selection index
* Traits of economic importance
* Selection aids
* Breeding management tools, equipment, materials and supplies
* Identification methods
	+ Ear tagging
	+ Ear notching
	+ Tattooing
	+ Branding
	+ Electronic transponders
* Animal welfare
* Culling criteria
* Occupational safety and health standards
 | * Written tests
* Observation
* Oral questions
* Third party report
* Interviewing
 |
| 1. Breed dairy animals
 | * Heat detection
* Oestrus cycle
* Mating systems
	+ Natural
	+ Artificial Insemination
	+ Embry transfer
* Parturition process
* Dystocia management
* Steaming up
* Breeding systems
	+ Pure breeding
	+ Cross breeding
	+ Line breeding
* Inbreeding depression
* Occupational safety and health standards
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party report
 |
| 1. Evaluate dairy animal breeding
 | * Breeding values
* Genetic gain
* Upgrading
* Dairy animal registration procedures
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party report
 |
| 1. Complete dairy animal breeding
 | * Communication
	+ Types of breeding documents (Records and reports)
	+ Inter-personal
* Waste management
 | * Observation
* Written tests
* Oral questions
* Interviewing
 |

**Suggested Methods of Instruction**

* Demonstration by trainer
* Practice by the trainee
* Field trips
* Discussions
* Direct instruction

**Recommended Resources**

|  |
| --- |
| **Functional dairy farm with the following:** |
| * Sire catalogues
* AI kit / services
* Embryo transfer services
* PPEs
* Weighing bands
* Identification equipment and materials
 | * Breeding males
* Feed rations
* Holding crush
* Breeding records
* Stationery
* PPEs
* Maternity pens
* Navel clips
 | * Water
* Weighing band
* Breeding calendar
* Disinfectants
* Livestock Production Manual
* Ropes
* Obstetrical lubricants
 |

#  DAIRY FEED FORMULATION

**UNIT CODE:** DA/CU/FM/CR/04/5/B

**Relationship to Occupational Standards**

This unit addresses the unit of competency: Formulate dairy feed

**Duration of Unit:** 96 hours

**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.

**Summary of Learning Outcomes**

1. Carry out food safety risk assessment to formulate dairy feed
2. Prepare to formulate dairy feed
3. Formulate dairy feed
4. Evaluate feed formulation
5. Complete feed formulation

**Learning Outcomes, Content and Methods of assessment**

| **Learning Outcome** | **Content** | **Methods of assessment**  |
| --- | --- | --- |
| 1. Carry out food safety risk assessment to dairy feed formulation
 | * Meaning of food safety
* Importance of food safety
* Principles of food safety
* Prerequisite programmes
	+ Meaning, importance, categories and establishment of prerequisite programmes
	+ Relevant programmes
		- Good agricultural practices
		- Good manufacturing practices
		- Standard Sanitary Operating Procedures
* Hazard analysis
	+ Enterprise description - Layout of premises and surrounding environment
	+ Product description
	+ Methods of distribution and storage of product
	+ Intended uses and consumers
	+ Developing flow diagram
	+ Identification of hazards at each step of the flow diagram
	+ Describing the hazard
	+ Significance of hazards
* Establishment of the HACCP plan
	+ Identifying critical control points
	+ Procedures of setting up critical control limits
	+ Establishment of monitoring procedures on the control limits
	+ Establishment of corrective actions
	+ Verification and validation procedures
	+ Record keeping
* Standards and legislations on food safety on formulating dairy feed
	+ Dairy animal feed standards
	+ Code of practice for milk and milk products
	+ Code of practice for animal feed industry
	+ Public health regulations
	+ Environmental Management and Coordination Act (EMCA)
 | * Written tests
* Oral questioning
* Observation
* Case study
 |
| 1. Prepare to formulate dairy feed
 | * Dairy species
* Grouping of dairy animals
	+ Calves and kids
	+ Heifers and doelings
	+ Lactating animals (early, mid and late lactation)
	+ Dry animals
	+ Bulls, bucks, steers and wethers
* Feedstuff sampling
* Ration package labelling
 | * Written tests
* Observation
* Oral questions
* Third party report
* Interviewing
 |
| 1. Formulate dairy feed
 | * Types and sources of nutrients
* Feeds and feedstuff classes
* Types of costs
* Nutritional content of feedstuff
* Animal feed manufacturing requirements
* Nutritional requirements of different species and classes of dairy animals
* Feed formulation methods
	+ Pearson square
	+ Step by step
	+ Trial and error
	+ Computer simulation
* Forms of feed presentation
* Feed processing methods
* Feed mixing methods
	+ Manual
	+ Mechanical
* Feed mixers
	+ Vertical
	+ Horizontal
	+ Transverse
* Packaging
* Feed storage
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party report
 |
| 1. Evaluate dairy feed formulation
 | * Feed analysis methods
	+ Chemical
	+ Physical
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party report
 |
| 1. Complete dairy feed formulation
 | * Good manufacturing practices
* Types of feeding documents
	+ Reports
	+ Records
* Dairy feeding waste disposal management
 | * Observation
* Written tests
* Oral questions
* Interviewing
 |

**Suggested Methods of Instruction**

* Project
* Demonstration by trainer
* Practice by the trainee
* Field trips
* Discussions
* Direct instruction

**Recommended Resources**

|  |
| --- |
| **Functional dairy farm with the following:** |
| * Tractors
* Trailer
* Chopping implements
* Hammer mills
* Grinding mills
* Feed mixers
* Feedstuff
* Detergents
* Fumigants
 | * Water
* Packaging material
* Labels
* Feed stores
* Stationery
* Weighing balances
* Calculators
* Pest control equipment and materials
 | * Pelleting machines
* Sampling kits
* Feedstuff nutrient content tables
* Gunny bags
* Twines
* PPEs
* Livestock production manual
 |

#  DAIRY ANIMALS FEEDING

**UNIT CODE:** DA/CU/FM/CR/05/5/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Feed dairy animals

**Duration of Unit:** 128 hours

**Unit Description**

This unit specifies the competencies required to supervise feeding of dairy animals. It involves applying food safety measures in participating in selection of dairy production and feeding systems; determination of animal nutritional requirements; mixing and feeding dairy rations; and documentation of feeding.

**Summary of Learning Outcomes**

1. Prepare to feed dairy animals
2. Carry out food safety risk assessment to feed dairy animals
3. Feed dairy animals
4. Evaluate dairy animal feeding
5. Complete dairy animal feeding

**Learning Outcomes, Content and Methods of assessment**

| **Learning Outcome** | **Content** | **Methods of assessment**  |
| --- | --- | --- |
| 1. Carry out food safety risk assessment to feed dairy animals
 | * Meaning of food safety
* Importance of food safety
* Principles of food safety
* Prerequisite programmes
	+ Meaning, importance, categories and establishment of prerequisite programmes
	+ Relevant programmes
		- Good agricultural practices
		- Good manufacturing practices
		- Standard Sanitary Operating Procedures
* Hazard analysis
	+ Enterprise description - Layout of premises and surrounding environment
	+ Product description
	+ Methods of distribution and storage of product
	+ Intended uses and consumers
	+ Developing flow diagram
	+ Identification of hazards at each step of the flow diagram
	+ Describing the hazard
	+ Significance of hazards
* Establishment of the HACCP plan
	+ Identifying critical control points
	+ Procedures of setting up critical control limits
	+ Establishment of monitoring procedures on the control limits
	+ Establishment of corrective actions
	+ Verification and validation procedures
	+ Record keeping
* Standards and legislations in food safety on feeding dairy feed
	+ Code of practice for animal feed industry
	+ Dairy animal feed standards
	+ Code of practice for milk and milk products
	+ Public health regulations
	+ Environmental Management and Coordination Act (EMCA)
 | * Written tests
* Oral questioning
* Observation
* Case study
 |
| 1. Prepare to feed dairy animals
 | * Agro Ecological zonation
	+ Zone mapping
	+ Matching forage to zones
* Dairy production systems
	+ Intensive
	+ Extensive
	+ Semi-intensive
* Grouping of dairy animals
	+ Calves and kids
	+ Heifers and doelings
	+ Lactating animals (early, mid and late lactation)
	+ Dry animals
	+ Bulls, bucks, steers and wethers
 | * Written tests
* Observation
* Oral questions
* Third party report
* Interviewing
 |
| 1. Feed dairy animals
 | * Types and sources of nutrients
* Feeds and feedstuff classes
* Nutritional requirements of different species and classes of dairy animals
* Lactation curve
* Feeding systems
	+ Separate concentrate feeding
	+ Total mixed rations
	+ Partly mixed rations
* Feeding strategies
	+ Ad libitum feeding
	+ Restricted concentrate feeding
	+ Flat rate feeding
* Feed mixing methods
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party report
 |
| 1. Evaluate dairy animal feeding
 | * Feed intake
* Feed conversion efficiency
* Feeding regimes
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party report
 |
| 1. Complete dairy animal feeding
 | * Feeding structures and equipment hygiene
* Types of feeding documents
	+ Reports
	+ Records
* Dairy feeding waste disposal management
 | * Observation
* Written tests
* Oral questions
* Interviewing
 |

**Suggested Methods of Instruction**

* Project
* Demonstration by trainer
* Practice by the trainee
* Field trips
* Discussions
* Direct instruction

**Recommended Resources**

|  |
| --- |
| **Functional dairy farm with the following:** |
| * Tractors
* Trailer
* Chopping implements
* Feed mixers
* Feed troughs
* Water troughs
 | * Pasture paddocks
* Water
* Feed rations
* Hay barn
* Silage silos
* Wheelbarrows
 | * Feeding stalls
* PPEs Weighing balances and bands
* Calculators
* Livestock production manual
 |

# DAIRY ANIMALS MILKING

**UNIT CODE:** DA/CU/FM/CR/06/5/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Milk dairy animals

**Duration of Unit:** 64 hours

**Unit Description**

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

**Summary of Learning Outcomes**

1. Carry out food safety risk assessment to milk dairy animals
2. Prepare to milk dairy animals
3. Milk dairy animals
4. Evaluate dairy animal milking
5. Complete dairy animal milking

**Learning Outcomes, Content and Methods of assessment**

| **Learning Outcome** | **Content** | **Methods of assessment**  |
| --- | --- | --- |
| 1. Carry out food safety risk assessment to milk dairy animals
 | * Meaning of food safety
* Importance of food safety
* Principles of food safety
* Prerequisite programmes
	+ Meaning, importance, categories and establishment of prerequisite programmes
	+ Relevant programmes
		- Good agricultural practices
		- Good manufacturing practices
		- Standard Sanitary Operating Procedures
* Hazard analysis
	+ Enterprise description - Layout of premises and surrounding environment
	+ Product description
	+ Methods of distribution and storage of product
	+ Intended uses and consumers
	+ Developing flow diagram
	+ Identification of hazards at each step of the flow diagram
	+ Describing the hazard
	+ Significance of hazards
* Establishment of the HACCP plan
	+ Identifying critical control points
	+ Procedures of setting up critical control limits
	+ Establishment of monitoring procedures on the control limits
	+ Establishment of corrective actions
	+ Verification and validation procedures
	+ Record keeping
* Standards and legislations in food safety on milking dairy feed
	+ Code of hygienic practices for milk and milk products
	+ Public Health regulations
	+ Environmental Management and Coordination Act (EMCA)
 | * Written tests
* Oral questioning
* Observation
* Case study
 |
| 1. Prepare to milk dairy animals
 | * Steaming up
* Milk synthesis
* Milk let down process
* Occupational safety and health standards
 | * Written tests
* Observation
* Oral questions
* Third party report
* Interviewing
 |
| 1. Milk dairy animals
 | * Hygienic milk production
* Mastitis
	+ Detection
	+ Management
* Milking methods, techniques and routine
	+ Hand milking
	+ Machine milking
* Milk storage
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party report
 |
| 1. Evaluate dairy animal milking
 | * Hygiene monitoring
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party report
 |
| 1. Complete dairy animal milking
 | * Milking parlour and equipment cleaning methods and procedures
* Communication
	+ Types of breeding documents (Records and reports)
	+ Inter-personal
* Waste management
 | * Observation
* Written tests
* Oral questions
* Interviewing
 |

**Suggested Methods of Instruction**

* Project
* Demonstration by trainer
* Practice by the trainee
* Field trips
* Discussions
* Direct instruction

**Recommended Resources**

|  |
| --- |
| **Functional dairy farm with the following:** |
| * Milking parlour
* Milking buckets
* Milk holding cans and cooling tanks
* Strip cup
* California Mastitis Test (CMT) kit
* Udder cloth
 | * Teat dip
* Disinfectants
* Detergents
* Hand brooms, brushes and scrubbers
* Water
* Restraining ropes / chains
* Weighing balances
 | * Sieves
* Waste management equipment and material Stationery
* Milk record sheets / books
* PPEs
* Livestock Production Manual
 |

# DAIRY YOUNG STOCK REARING

**UNIT CODE:** DA/CU/FM/CR/07/5/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Rear Dairy Young Stock

**Duration of Unit:** 96 hours

**Unit Description**

This unit specifies the competencies required to rear dairy young stock. It involves applying food safety measures in supervising steaming up, parturition handling, feeding, identification, housing, weaning and routine management activities for young stock.

**Summary of Learning Outcomes**

1. Carry out food safety risk assessment to rear dairy young stock
2. Prepare to rear dairy young stock
3. Rear dairy young stock
4. Evaluate rearing of dairy young stock
5. Complete rearing of dairy young stock

**Learning Outcomes, Content and Methods of assessment**

| **Learning Outcome** | **Content** | **Methods of assessment**  |
| --- | --- | --- |
| 1. Carry out food safety risk assessment to rear dairy young stock
 | * Meaning of food safety
* Importance of food safety
* Principles of food safety
* Prerequisite programmes
	+ Meaning, importance, categories and establishment of prerequisite programmes
	+ Relevant programmes
		- Good agricultural practices
		- Good manufacturing practices
		- Standard Sanitary Operating Procedures
* Hazard analysis
	+ Enterprise description - Layout of premises and surrounding environment
	+ Product description
	+ Methods of distribution and storage of product
	+ Intended uses and consumers
	+ Developing flow diagram
	+ Identification of hazards at each step of the flow diagram
	+ Describing the hazard
	+ Significance of hazards
* Establishment of the HACCP plan
	+ Identifying critical control points
	+ Procedures of setting up critical control limits
	+ Establishment of monitoring procedures on the control limits
	+ Establishment of corrective actions
	+ Verification and validation procedures
	+ Record keeping
* Standards and legislations in food safety on rearing dairy young stock
	+ Animal Disease Act
 | * Written tests
* Oral questioning
* Observation
* Case study
 |
| 1. Prepare to rear dairy young stock
 | * Steaming up
* Parturition signs and process
* Dystocia management
* Occupational safety and health standards
 | * Written tests
* Observation
* Oral questions
* Third party report
* Interviewing
 |
| 1. Rear dairy young stock
 | * Neonate handling
* Immunology
* Gross anatomy and basic physiology
* Nutritional requirements
* Rumen development
* Feeding regimes
* Identification methods
	+ Ear tagging
	+ Ear notching
	+ Tattooing
	+ Branding
	+ Electronic transponders
* Young stock housing
* Debudding methods
	+ Hot iron
	+ Chemical (caustic soda)
* Removal of extra mammary glands
* Culling criteria
* Weaning criteria and process
* Animal welfare
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party report
 |
| 1. Evaluate rearing of dairy young stock
 | * Growth rate monitoring
* Dairy animal registration procedures
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party report
 |
| 1. Complete rearing of dairy young stock
 | * Communication
	+ Types of breeding documents (Records and reports)
	+ Inter-personal
* Waste management
 | * Observation
* Written tests
* Oral questions
* Interviewing
 |

**Suggested Methods of Instruction**

* Project
* Demonstration by trainer
* Practice by the trainee
* Field trips
* Discussions
* Direct instruction

**Recommended Resources**

|  |
| --- |
| **Functional dairy farm with the following:** |
| * Maternity pens
* Ropes
* Obstetrical lubricants
* Disinfectants
* Navel clips
* Housing pens
* Feeding bottles and buckets
* Cleaning materials and equipment
* Weighing bands
 | * Identification equipment and materials
* Feed rations
* Holding crush
* Hay barns, silos and feed stores
* Feeding stalls
* Feeding and watering troughs
* Waste management equipment and material
 | * Teat clippers
* Breeding records
* Stationery
* Water
* Disbudding tools and materials
* Castration tools and equipment
* PPEs
* Livestock Production Manual
 |

#  DAIRY HERD HEALTH MAINTENANCE

**UNIT CODE:** DA/CU/FM/CR/08/5/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Maintain dairy herd health

**Duration of Unit:** 96 hours

**Unit Description**

This unit specifies the competencies required to maintain dairy herd health. It involves applying food safety measures in supervising farm bio-security, parasite control, vaccination, disease control and animal grooming.

**Summary of Learning Outcomes**

1. Carry out food safety risk assessment to maintain dairy herd health
2. Prepare to maintain dairy herd health
3. Maintain dairy herd health
4. Evaluate maintenance of dairy herd health
5. Complete maintenance of dairy herd health

**Learning Outcomes, Content and Methods of assessment**

| **Learning Outcome** | **Content** | **Methods of assessment**  |
| --- | --- | --- |
| 1. Carry out food safety risk assessment to maintain dairy herd health
 | * Meaning of food safety
* Importance of food safety
* Principles of food safety
* Prerequisite programmes
	+ Meaning, importance, categories and establishment of prerequisite programmes
	+ Relevant programmes
		- Good agricultural practices
		- Good manufacturing practices
		- Standard Sanitary Operating Procedures
* Hazard analysis
	+ Enterprise description - Layout of premises and surrounding environment
	+ Product description
	+ Methods of distribution and storage of product
	+ Intended uses and consumers
	+ Developing flow diagram
	+ Identification of hazards at each step of the flow diagram
	+ Describing the hazard
	+ Significance of hazards
* Establishment of the HACCP plan
	+ Identifying critical control points
	+ Procedures of setting up critical control limits
	+ Establishment of monitoring procedures on the control limits
	+ Establishment of corrective actions
	+ Verification and validation procedures
	+ Record keeping
* Standards and legislations in food safety on maintaining dairy herd health
	+ Animal Disease Act
	+ Code of hygienic practices for milk and milk products
	+ Dairy Industry Act (Cap 336)
 | * Written tests
* Oral questioning
* Observation
* Case study
 |
| 1. Prepare to maintain dairy herd health
 | * Biosecurity
	+ Measures
	+ Regulatory bodies
* Occupational safety and health standards
 | * Written tests
* Observation
* Oral questions
* Third party report
* Interviewing
 |
| 1. Maintain dairy herd health
 | * Gross anatomy and basic physiology
* Animal handling
* Common diseases
	+ Types
	+ Causes
	+ Symptoms
	+ Prevention and control measures
* Types of parasites
	+ External
	+ Internal
* Parasites control methods
	+ Chemical
	+ Biological
	+ Integrated
* Immunology
* Vaccination schedules
* Hoof care
* Disbudding methods
	+ Hot iron
	+ Chemical (caustic soda)
* Dehorning procedures
	+ Dehorning wire
	+ Dehorning saw
	+ Cauterization
* Grooming
* Animal welfare
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party report
 |
| 1. Evaluate maintenance of dairy herd health
 | * Parasite and disease resistance
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party report
 |
| 1. Complete maintenance of dairy herd health
 | * Communication
	+ Types of breeding documents (Records and reports)
	+ Inter-personal
* Waste management
 | * Observation
* Written tests
* Oral questions
* Interviewing
 |

**Suggested Methods of Instruction**

* Project
* Demonstration by trainer
* Practice by the trainee
* Field trips
* Discussions
* Direct instruction

**Recommended Resources**

|  |
| --- |
| **Functional dairy farm with the following:** |
| * Holding crush
* Ropes
* Disinfectants
* Navel clips
* Scapels
* Cleaning materials and equipment
* Weighing bands
* Hoof trimming tools, equipment and structures
 | * Dewormers
* Drenching and bolus guns
* Acaricides
* Plunge dip and spray race
* Spayers
* Vaccines
* Waste management equipment and material
* Grooming tools and equipment
 | * Herd health records
* Stationery
* Water
* Disbudding and dehorning tools and materials
* PPEs
* Livestock Production Manual
 |