****

**REPUBLIC OF KENYA**

**COMPETENCY BASED CURRICULUM**

**FOR**

**DAIRY FARM MANAGEMENT**

**LEVEL 3**



TVET CDACC

P.O. BOX 15745-00100

NAIROBI

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**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 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, 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 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

MoALF Ministry of Agriculture Livestock and Fisheries

MESPT Micro Enterprises Support Programme Trust

PPE Personal Protective Equipment

SSAC Sector Skills Advisory Committee

TVET Technical and Vocational Education and Training

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# KEY TO UNIT CODE

**DA /CU/FM/BC/CR/01/ 3/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 performing operations in a dairy farm. It entails participating in developing farm structures, producing dairy forage, breeding dairy animals, formulating dairy feed, feeding dairy animals, milking dairy animals, rearing young stock and maintaining 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** | **Credits** |
| DA/CU/FM/BC/01/3/B | Communication skills | 15 | 1.5 |
| DA/CU/FM/BC/02/3/B | Numeracy skills | 15 | 1.5 |
| DA/CU/FM/BC/03/3/B | Digital literacy | 20 | 2 |
| DA/CU/FM/BC/04/3/B | Entrepreneurial skills | 40 | 4 |
| DA/CU/FM/BC/05/3/B | Employability skills | 20 | 2 |
| DA/CU/FM/BC/06/3/B | Environmental literacy | 15 | 1.5 |
| DA/CU/FM/BC/07/3/B | Occupational safety and health practices | 15 | 1.5 |
| **Total** | | **140** | **14** |

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit Code** | **Unit Title** | **Duration in Hours** | **Credits** |
| DA/CU/FM/CR/01/3/B | Dairy farm structures development | 20 | 2 |
| DA/CU/FM/CR/02/3/B | Dairy forage production | 40 | 4 |
| DA/CU/FM/CR/03/3/B | Dairy animals breeding | 20 | 2 |
| DA/CU/FM/CR/04/3/B | Dairy feed formulation | 20 | 2 |
| DA/CU/FM/CR/05/3/B | Dairy animals feeding | 30 | 3 |
| DA/CU/FM/CR/06/3/B | Dairy animals milking | 30 | 3 |
| DA/CU/FM/CR/07/3/B | Dairy young stock rearing | 30 | 3 |
| DA/CU/FM/CR/08/3/B | Dairy herd health maintenance | 20 | 2 |
| Attachment | | **150** | **15** |
| **Total** | | **360** |  |
| **Grand Total** | | **500** | **50** |

The total duration of the course for an average trainee is 500 hours which is equivalent to 17 weeks at 30 hours per week including 150 hours (5 weeks) of field attachment.

**Entry Requirements**

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

1. Kenya Certificate of Primary Education (KCPE) or Kenya Certificate of Secondary Education (KCSE)

**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 6 weeks in a dairy production farm.

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

**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 assessor and verifiers are accredited by TVET CDACC which also coordinates external assessment.

**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 3, 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/01/3/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Communication Skills

**Duration of Unit:** 15 hours

**Unit Description**

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

**Summary of Learning Outcomes**

1. Obtain and convey workplace information
2. Speak English at a basic operational level
3. Participate in workplace meetings and discussions
4. Complete relevant work-related documents

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Obtain and convey workplace information | * Communication process * Modes of communication * Medium of communication * Effective communication * Barriers to communication * Flow of communication * Sources of information * Types of questions * Organizational policies * Workplace etiquette * Ethical work practices in handling communication | * Written tests * Oral questioning |
| 1. Speak English at a basic operational level | * English grammar   + Nouns, verbs, adjectives, adverbs, pronouns prepositions * English speaking   + Pronunciation   + Simple conversations * Taking verbal instructions * Reading and writing in English * Forms of expression in English | * Written tests * Oral * Role play |
| 1. Participate in workplace meetings and discussions | * Nature of workplace meetings * Meeting protocols * Workplace interactions | * Oral questioning * Written tests |
| 1. Complete relevant work-related documents | * Types and purposes of workplace documents and forms * Methods used in filling forms and documents * Recording workplace data * Process of distributing workplace forms and documents * Report writing * Types of workplace reports | * Written tests * Oral questioning |

**Suggested Methods of Instruction**

* Discussion
* Role play
* Brainstorming
* Viewing of related videos
* Role play

**Recommended Resources**

* Desktop computers/laptops
* Projectors
* Report writing templates
* Pens
* Notebooks

# NUMERACY SKILLS

**UNIT CODE:** DA/CU/FM/BC/02/3/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Numeracy Skills

**Duration of Unit:** 15 hours

**Unit Description**

This unit covers the competencies required to identify and undertake simple numerical processes. The person who is competent in this unit shall be able to use / work with whole numbers and money up to one hundred thousand; Locate, compare and use highly familiar measurement; Use highly familiar maps and diagrams; Identify and use some common 2D shapes; and locate specific Information in highly familiar tables, graphs and charts for work.

**Summary of Learning Outcomes**

1. Use whole numbers for work
2. Locate, compare and use highly familiar measurement for work
3. Use highly familiar maps and diagrams for work
4. Identify and use some common 2D shapes for work
5. Locate specific Information in highly familiar tables, graphs and charts for work

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Use whole numbers for work | * Whole numbers * Use of Zeros * Use of halves * Sizes * Grouping of numbers * Addition and subtraction of whole numbers * Numerical information, * Symbols | * Written tests * Assignments * Supervised exercises |
| 1. Locate, compare and use highly familiar measurement for work | * Measurements * Units of measurements and their use * Digital time am and pm * Calendars | * Written tests * Assignments * Supervised exercises |
| 1. Use highly familiar maps and diagrams for work | * + Use of Maps and * Diagrams simple * symbols and pictorial   + Giving simple oral directions to locate objects | * Oral * Assignments * Supervised exercises |
| 1. Identify and use some common 2D shapes for work | * + Two dimensional shapes   + Describe common objects in terms of size and shape   + Compare objects   + Group common objects based on shape, size, color and features | * Written tests * Assignments * Supervised exercises |
| 1. Locate specific Information in highly familiar tables, graphs and charts for work | * + Simple tables   + Features of simple graphs and charts   + Numerical information in tables, graphs & charts | * Oral * Assignments * Supervised exercises |

**Suggested Methods of Instructions**

* Instructor led facilitation of theory.
* Practical demonstration of tasks by trainer
* Role play
* Discussion
* Demonstration by trainees and comments and corrections by trainers

**Recommended Resources**

* Common 2D shapes objects
* Calculator
* Basic measuring instruments
* Mathematical tables

# DIGITAL LITERACY

**UNIT CODE:** DA/CU/FM/BC/03/3/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Digital Literacy

**Duration of Unit:** 20 hours

**Unit Description**

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

**Summary of Learning Outcomes**

1. Identify computer hardware and software
2. Apply security measures to data, hardware and software
3. Apply computer software in solving tasks
4. Apply internet and email in communication at workplace

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Identify computer hardware and software | * Definition of a computer * Functions of a computer * Components of a computer * Classification of computers * Computer software | * Written tests * Practice assignments |
| 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 | * Written tests * Oral presentation |
| 1. Apply computer software in solving tasks | * Operating systems * Word processing * Spread sheets * Data base | * Oral questioning * Practical |
| 1. Apply internet and email in communication at workplace | * Computer networks * Uses of internet * Electronic mail (e-mail) concept | * Oral questioning * Oral presentation * Written test |

**Suggested Methods of Instruction**

* Instructor led facilitation of theory
* Demonstration by trainer
* Assignments
* Viewing of related videos
* Group discussions

**Recommended Resources**

* Desk top computers
* Laptop computers
* Other digital devices
* Printers
* Storage devices
* Internet access
* Computer software

# ENTREPRENEURIAL SKILLS

**UNIT CODE:** DA/CU/FM/BC/04/3/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Entrepreneurial Skills

**Duration of unit:** 40 hours

**Unit description**

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

**Summary of Learning Outcomes**

1. Develop entrepreneurial culture
2. Identify entrepreneurial opportunities
3. Start a small business
4. Operate a small business
5. Grow a small business

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Develop entrepreneurial culture | * Definition of entrepreneur * Importance of entrepreneurship * Common terminologies in entrepreneurship * Entrepreneurship and employment creation * Formal and informal employment * Habits that promote entrepreneurial development * Cultural factors that inhibit entrepreneurship | * Individual/group assignments * Written tests * Oral |
| 1. Identify entrepreneurial opportunities | * Types, characteristics, qualities & role of entrepreneurs * SWOT analysis * Generating Business ideas * Business opportunities * Evaluation of business opportunities | * Individual/group assignments * Written tests * Oral questioning * Oral presentation |
| 1. Start a small business | * Factors to consider when starting a small business * Legal requirement for starting a small business * Procedure of starting a small business * The dos and don’ts of starting a small business * Challenges faced when starting a small business and mitigating factors * Launch of a small business | * Oral questioning * Individual/group assignments * Written tests |
| 1. Operate a small business | * Organizational structure of a small business * Managing small business finances * Book keeping * Business support services * Marketing for small businesses * Basic IT application in small business | * Individual/group assignments * Written tests |
| 1. Grow a small business | * Methods of growing/expanding a small business * Resources for growing small business * Small business growth plan * ICT and business growth | * Individual/group assignments * Written tests |

**Suggested Methods of Instruction**

* Instructor led facilitation of theory
* Demonstration by trainer
* assignments
* Role play
* Case study

**Recommended Resources**

* Case studies for small businesses
* Business plan template
* Laptop/ desktop computer
* Internet
* Telephone
* Writing materials

# EMPLOYABILITY SKILLS

**UNIT CODE:** DA/CU/FM/BC/05/3/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Demonstrate Employability Skills

**Duration of Unit:** 20 hours

**Unit Description**

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

**Summary of Learning Outcomes**

1. Conduct self-management
2. Demonstrate critical safe work habits
3. Demonstrate workplace learning
4. Demonstrate workplace ethics

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Conduct self-management | * Self-awareness * Formulating personal vision, mission and goals * Strategies for overcoming life challenges * Emotional intelligence * Assertiveness * Developing and maintaining high self-esteem * Developing and maintaining positive self-image * Accountability and responsibility * Good work habits * Self-awareness * Financial literacy * Healthy lifestyle practices | * Written tests * Oral questioning * Portfolio of evidence * Third party report |
| 1. Demonstrate critical safe work habits | * Stress and stress management * Punctuality and time consciousness * Interpersonal communication * Sharing information * Resources utilization * HIV and AIDS * Drug and substance abuse * Handling emerging issues | * Written tests * Oral questioning * Portfolio of evidence * Third party report |
| 1. Demonstrate workplace learning | * Personal training needs identification and assessment * Cultural aspects of work * Application of learning * Safe use of technology * Identifying opportunities * Workplace innovation * Handling emerging issues * Future trends and concerns in learning | * Written tests * Oral questioning * Portfolio of evidence * Third party report |
| 1. Demonstrate workplace ethics | * Meaning of ethics * Ethical perspectives * Values and beliefs * Organization code of ethics * Common ethical dilemmas * Organization culture * Corruption, bribery and conflict of interest * Privacy and data protection * Harassment and mutual respect * Financial responsibility/accountability * Etiquette * Emerging issues in ethics | * Written tests * Oral questioning * Portfolio of evidence * Third party report |

**Suggested Methods of Instruction**

* Simulation/Role play
* Group Discussion
* Presentations
* Q&A
* Case studies
* Assignments

**Recommended Resources**

* Computers
* Stationery
* Charts
* Video clips
* Audio tapes
* Radio sets
* TV sets
* LCD projectors

# ENVIRONMENTAL LITERACY

**UNIT CODE**: DA/CU/FM/BC/06/3/B

**Relationship to Occupational Standards**:

This unit addresses the Unit of Competency: Demonstrate Environmental Literacy

**Duration of Unit:** 15 hours

**Unit Description**

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

**Summary of Learning Outcomes**

1. Control environmental hazard
2. Control environmental Pollution
3. Demonstrate sustainable resource use

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Control environmental hazard | * Environmental Management and Coordination Act 1999 * Solid Waste Act * Storage of environmentally hazardous materials * Disposal of hazardous wastes * Types and uses of PPEs in line with environmental regulations * Occupational Safety and Health Act 2007 | * Written tests * Oral questions * Observation of work procedures |
| 1. Control environmental pollution | * Types of pollution * Environmental pollution control and management * Procedures for waste management | * Written tests * Oral questions * Observation of work procedures |
| 1. Demonstrate sustainable use of resource | * Types of resources * Sustainable resource use and management * Principles of 3Rs (Reduce, Reuse, Recycle) | * Written tests * Oral questions * Observation of work procedures |

**Suggested Methods of Instruction**

* Instructor led facilitation theory
* Discussion
* Demonstration by trainer
* Assignments
* Field trip

**Recommended Resources**

* Standard operating and/or other workplace procedures manuals
* Specific job procedures manuals
* Solid Waste Act
* Environmental Management and Coordination Act 1999
* Machine/equipment manufacturer’s specifications and instructions
* Personal Protective Equipment (PPE)

# OCCUPATIONAL SAFETY AND HEALTH PRACTICES

**UNIT CODE: DA**/CU/FM/BC/07/3/B

**Relationship to Occupational Standards**

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

**Duration of Unit:** 15 hours

**Unit Description**

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

**Summary of Learning Outcomes**

1. Prepare to apply workplace safety and health practices
2. Compliance with occupational safety and health Act

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

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of assessment** |
| 1. Prepare to apply workplace safety and health practices | * Awareness of legislation that outlines the minimum standards for occupational safety and health requirements/ regulations * Benefits of implementing an occupational safety and health program * Safety requirements/ regulations of own work and of other workers * Workplace standards and procedures for incidents and emergencies * Prevention and Control Measures for accidents, injuries and sickness | * Oral tests * Written questions * Observation of work procedures |
| 2. Compliance with occupational safety and health Act | * Safety instructions and safety signs * Safe handling of tools, equipment and materials * Use of safe guards and safety devices * Reporting of hazards, incidents, injuries and sickness in the workplace | * Written tests * Oral questions * Observation of work procedures |

**Suggested Methods of Instruction**

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

**Recommended Resources**

* Occupational safety and health standards
* Standard operating and/or other workplace procedures manuals
* Specific job procedures manuals
* Client/supplier instructions
* Organizational or external personnel
* Machine/equipment manufacturer’s specifications and instructions
* Quality standards

# CORE UNITS OF LEARNING

# DAIRY FARM STRUCTURES DEVELOPMENT

**UNIT CODE:** DA/CU/FM/CR/01/3/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Develop dairy farm structures

**Duration of Unit:**24 hours

**Unit Description**

This unit specifies the competencies required to develop dairy farm structures. It involves applying food safety measures while preparing construction materials and site; participating in construction and repair of dairy farm structure; and ensuring their cleanliness.

**Summary of Learning Outcomes**

* 1. Apply food safety measures to develop dairy farm structures
  2. Prepare to develop dairy farm structures
  3. Develop dairy farm structures
  4. Evaluate construction dairy farm structures
  5. Complete dairy farm structures construction

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

| **Learning Outcome** | **Content** | **Methods of assessment** |
| --- | --- | --- |
| 1. Apply food safety measures to develop dairy farm structures | * Meaning of food safety * Importance of food safety * Principles of food safety * Prerequisite programmes   + Meaning and importance of prerequisite programmes   + Relevant programmes     - Good agricultural practices     - Good manufacturing practices     - Standard Sanitary Operating Procedures * Hazard analysis   + Significance of hazards   + Types and sources of hazards   + Methods of hazard control * Components of HACCP plan   + Critical control points   + Critical control limits   + Monitoring procedures on the control limits   + Corrective actions   + Verification and validation   + Record keeping | * Written tests * Oral questioning * Observation | |
| 1. Prepare to develop dairy farm structure | * 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 * Types of dairy enterprises * Methods of bush clearing * Occupational Safety and Health regulations | * Written tests * Observation * Oral questions * Third party reports * Interviewing |
| 1. Develop dairy farm structures | * Area measurement * Stone laying * Barbed wire/chain link laying * Pole fixing * Components of dairy farm structures | * Observation * Written tests * Oral questions * Interviewing |
| 1. Evaluate construction of dairy farm structures | * + Structure repair and cleaning procedures | * Observation * Written tests * Oral questions * Interviewing |
| 1. Complete dairy farm structures construction | * + Type of materials   + Waste disposal | * 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 | * Poles * Stones * Sand * Cement * Ballast * Tape measures * Barbed/chain link | * Metal bars * Land * Live fence planting materials * Hoe |

# DAIRY FORAGE PRODUCTION

**UNIT CODE:** DA/CU/FM/CR/02/3/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Produce dairy forage

**Duration of Unit:** 48 hours

**Unit Description**

This unit specifies the competencies required to produce dairy forage. It involves applying food safety measures while participating in land preparation; soil fertility maintenance; and forage establishment, management, conservation and storage.

**Summary of Learning Outcomes**

1. Apply food safety measures 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. Apply food safety measures to produce dairy forage | * Meaning of food safety * Importance of food safety * Principles of food safety * Prerequisite programmes   + Meaning and importance of prerequisite programmes   + Relevant programmes     - Good agricultural practices     - Good manufacturing practices     - Standard Sanitary Operating Procedures * Hazard analysis   + Significance of hazards   + Types and sources of hazards   + Methods of hazard control * Components of HACCP plan   + Critical control points   + Critical control limits   + Monitoring procedures on the control limits   + Corrective actions   + Verification and validation   + Record keeping | * Written tests * Oral questioning * Observation |
| 1. Prepare to produce dairy forage | * Soil conservation methods * Methods of land preparation * Planting materials   + Types   + Preparation | * Written tests * Observation * Oral questions * Third party reports * 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 dairy forage production | * Forage judging * Forage quantity forecasting | * Observation * Written tests * Oral questions * Product analysis * Interviewing |
| 1. Complete dairy forage production | * Forage conservation methods   + Hay making   + Silage making * Forage storage * Waste disposal | * 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/03/3/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Breed dairy animals

**Duration of Unit:** 24 hours

**Unit Description**

This unit specifies the competencies required to breed dairy animals. It involves applying food safety measures while participating in dairy animal identification, heat detection, parturition handling and restraining dairy animals.

**Summary of Learning Outcomes**

1. Apply food safety measures 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. Apply food safety measures to breed dairy animals | * Meaning of food safety * Importance of food safety * Principles of food safety * Prerequisite programmes   + Meaning and importance of prerequisite programmes   + Relevant programmes     - Good agricultural practices     - Good manufacturing practices     - Standard Sanitary Operating Procedures * Hazard analysis   + Significance of hazards   + Types and sources of hazards   + Methods of hazard control * Components of HACCP plan   + Critical control points   + Critical control limits   + Monitoring procedures on the control limits   + Corrective actions   + Verification and validation   + Record keeping | * Written tests * Oral questioning * Observation |
| 1. Prepare to breed dairy animals | * Dairy animal breeds * Breeding management tools, equipment, materials and supplies * Identification methods   + Ear tagging   + Ear notching   + Tattooing   + Branding   + Electronic transponders * Animal welfare * Occupational safety and health standards | * Written tests * Observation * Oral questions * Third party reports * Interviewing |
| 1. Breed dairy animals | * Heat detection * Dairy animal restraining methods and procedures * Mating systems   + Natural   + Artificial Insemination * Gestation lengths * Parturition process * Signs of dystocia * Steaming up * Inbreeding depression * Occupational safety and health regulations | * Observation * Written tests * Oral questions * Interviewing * Third party reports |
| 1. Evaluate dairy animal breeding | * Upgrading * Dairy animal registration benefits | * Observation * Written tests * Oral questions * Interviewing * Third party reports |
| 1. Complete dairy animal breeding | * Types of breeding supplies and materials * Waste disposal | * 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:** | | |
| * AI services * PPEs * Weighing bands * Identification equipment and materials * Navel clips | * Breeding males * Feed rations * Holding crush * PPEs * Maternity pens * Ropes | * Water * Weighing band * Breeding calendar * Disinfectants * Livestock Production Manual |

# DAIRY FEED FORMULATION

**UNIT CODE:** DA/CU/FM/CR/04/3/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Formulate dairy feed

**Duration of Unit:**24 hours

**Unit Description**

This unit specifies the competencies required to formulate dairy feed. It involves applying food safety measures while participating in collection of feed ingredient and ration samples; processing and mixing feed ingredients; and ration packaging and storage.

**Summary of Learning Outcomes**

1. Apply food safety measures to formulate dairy feed
2. Prepare to formulate dairy feed
3. Formulate dairy feed
4. Evaluate dairy feed formulation
5. Complete dairy feed formulation

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

| **Learning Outcome** | **Content** | **Methods of assessment** |
| --- | --- | --- |
| 1. Apply food safety measures to formulate dairy feed | * Meaning of food safety * Importance of food safety * Principles of food safety * Prerequisite programmes   + Meaning and importance of prerequisite programmes   + Relevant programmes     - Good agricultural practices     - Good manufacturing practices     - Standard Sanitary Operating Procedures * Hazard analysis   + Significance of hazards   + Types and sources of hazards   + Methods of hazard control * Components of HACCP plan   + Critical control points   + Critical control limits   + Monitoring procedures on the control limits   + Corrective actions   + Verification and validation   + Record keeping | * Written tests * Oral questioning * Observation |
| 1. Prepare to formulate dairy feed | * Dairy species * Classes of dairy animals   + Calves and kids   + Heifers and doelings   + Lactating animals (early, mid and late lactation)   + Dry animals   + Bulls, bucks, steers and wethers * Feedstuff sample collection * Ration package labeling | * Written tests * Observation * Oral questions * Third party reports * Interviewing |
| 1. Formulate dairy feed | * Feeds and feedstuff classes * Animal feed manufacturing requirements * 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 reports |
| 1. Evaluate dairy feed formulation | * Feed ration sample collection * Feed ration visual appraisal | * Observation * Written tests * Oral questions * Interviewing * Third party reports |
| 1. Complete dairy feed formulation | * Good manufacturing practices * Waste product disposal | * 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 * Chopping implements * Hammer mills * Grinding mills * Feed mixers * Feedstuff | * Water * Packaging material * Labels * Feed stores * Weighing balances * Pest control equipment and materials | * Pelleting machines * Sampling kits * Gunny bags * Twines * PPEs * Detergents * Fumigants |

# DAIRY ANIMALS FEEDING

**UNIT CODE:** DA/CU/FM/CR/05/3/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Feed dairy animals

**Duration of Unit:**36 hours

**Unit Description**

This unit specifies the competencies required to feed dairy animals. It involves applying food safety measures while participating in separating dairy animals into different classes, feedstuff preparation, ration mixing and dispensing rations into feeding troughs.

**Summary of Learning Outcomes**

* 1. Apply food safety measures to feed dairy animals
  2. Prepare 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. Apply food safety measures to feed dairy animals | * Meaning of food safety * Importance of food safety * Principles of food safety * Prerequisite programmes   + Meaning and importance of prerequisite programmes   + Relevant programmes     - Good agricultural practices     - Good manufacturing practices     - Standard Sanitary Operating Procedures * Hazard analysis   + Significance of hazards   + Types and sources of hazards   + Methods of hazard control * Components of HACCP plan   + Critical control points   + Critical control limits   + Monitoring procedures on the control limits   + Corrective actions   + Verification and validation   + Record keeping | * Written tests * Oral questioning * Observation |
| 1. Prepare to feed dairy animals | * 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 reports * Interviewing |
| 1. Feed dairy animals | * Feeds and feedstuff classes * Feeding systems   + Separate concentrate feeding   + Total mixed rations   + Partly mixed rations * Feed mixing methods | * Observation * Written tests * Oral questions * Interviewing * Third party reports |
| 1. Evaluate dairy animal feeding | * Feed intake * Feeding regimes | * Observation * Written tests * Oral questions * Interviewing * Third party reports |
| 1. Complete dairy animal feeding | * Feeding structures and equipment hygiene * Dairy feeding waste disposal | * 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 * Chopping implements * Feed mixers * Feed troughs | * Pasture paddocks * Water * Feed rations * Hay barn * Silage silos | * Feeding stalls * PPEs * Weighing balances and bands * Wheelbarrows * Water troughs |

# DAIRY ANIMALS MILKING

**UNIT CODE:** DA/CU/FM/CR/06/3/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Milk dairy animals

**Duration of Unit:** 36 hours

**Unit Description**

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

**Summary of Learning Outcomes**

1. Apply food safety measures 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. Apply food safety measures to milk dairy animals | * Meaning of food safety * Importance of food safety * Principles of food safety * Prerequisite programmes   + Meaning and importance of prerequisite programmes   + Relevant programmes     - Good agricultural practices     - Good manufacturing practices     - Standard Sanitary Operating Procedures * Hazard analysis   + Significance of hazards   + Types and sources of hazards   + Methods of hazard control * Components of HACCP plan   + Critical control points   + Critical control limits   + Monitoring procedures on the control limits   + Corrective actions   + Verification and validation   + Record keeping | * Written tests * Oral questioning * Observation |
| 1. Prepare to milk dairy animals | * Milk let down process * Occupational safety and health procedures | * Written tests * Observation * Oral questions * Third party reports * Interviewing |
| 1. Milk dairy animals | * Dairy animal restraining procedure * Hygienic milk production * Mastitis detection and prevention * Milking methods, techniques and routine   + Hand milking   + Machine milking * Milk storage | * Observation * Written tests * Oral questions * Interviewing * Third party reports |
| 1. Evaluate dairy animal milking | * Hygiene monitoring | * Observation * Written tests * Oral questions * Interviewing * Third party reports |
| 1. Complete dairy animal milking | * Milking parlour and equipment cleaning methods and procedures * Communication * Waste disposal | * 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:** | | |
| * Milking parlour * Milking buckets * Milk holding cans and cooling tanks * Strip cup * Carlifonia Mastitis Test (CMT) kit * Udder cloth | * Teat dip * Disinfectants * Detergents * Hand brooms, brushes and scrubbers * Water * Restraining ropes / chains | * Sieves * Waste management equipment and material * Stationery * Milk record sheets / books * PPEs * Weighing balances |

# DAIRY YOUNG STOCKREARING

**UNIT CODE:** DA/CU/FM/CR/07/3/B

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Rear dairy young stock

**Duration of Unit:**36 hours

**Unit Description**

This unit specifies the competencies required to rear dairy young stock. It involves applying food safety measures while participating in steaming up of dams; care of neonates; and feeding, identification, housing, weighing, weaning and restraining young stock.

**Summary of Learning Outcomes**

1. Apply food safety measures 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. Apply food safety measures to rear dairy young stock | * Meaning of food safety * Importance of food safety * Principles of food safety * Prerequisite programmes   + Meaning and importance of prerequisite programmes   + Relevant programmes     - Good agricultural practices     - Good manufacturing practices     - Standard Sanitary Operating Procedures * Hazard analysis   + Significance of hazards   + Types and sources of hazards   + Methods of hazard control * Components of HACCP plan   + Critical control points   + Critical control limits   + Monitoring procedures on the control limits   + Corrective actions   + Verification and validation   + Record keeping | * Written tests * Oral questioning * Observation |
| 1. Prepare to rear dairy young stock | * Steaming up * Parturition signs and process * Occupational safety and health standards | * Written tests * Observation * Oral questions * Third party reports * Interviewing |
| 1. Rear dairy young stock | * Neonate handling * Colostrum feeding and benefits * Feeding regimes * Identification methods   + Ear tagging   + Ear notching   + Tattooing   + Branding   + Electronic transponders * Young stock housing * Young stock handling and restraining * Weaning process * Animal welfare | * Observation * Written tests * Oral questions * Interviewing * Third party reports |
| 1. Evaluate rearing of dairy young stock | * Livestock weighing methods and procedures * Dystocia signs | * Observation * Written tests * Oral questions * Interviewing * Third party reports |
| 1. Complete rearing of dairy young stock | * Communication * Waste disposal | * 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:** | | |
| * Maternity pens * Ropes * Disinfectants * Navel clips * Housing pens * Feeding bottles and buckets * Weighing bands / bridge | * Identification equipment and materials * Feed rations * Holding crush * Hay barns, silos and feed stores * Cleaning materials and equipment | * Feeding stalls * Feeding and watering troughs * Water * PPEs * Waste management equipment and material |

# DAIRY HERD HEALTH MAINTENANCE

**UNIT CODE:** DA/CU/FM/CR/08/3/B

**Relationship to Occupational Standards**

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

**Duration of Unit:**24 hours

**Unit Description**

This unit specifies the competencies required to maintain dairy herd health. It involves applying food safety measures while participating in implementation of farm biosecurity, parasite and disease control, hoof trimming and animal grooming.

**Summary of Learning Outcomes**

* 1. Apply food safety measures 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. Apply food safety measures to maintain dairy herd health | * Meaning of food safety * Importance of food safety * Principles of food safety * Prerequisite programmes   + Meaning and importance of prerequisite programmes   + Relevant programmes     - Good agricultural practices     - Good manufacturing practices     - Standard Sanitary Operating Procedures * Hazard analysis   + Significance of hazards   + Types and sources of hazards   + Methods of hazard control * Components of HACCP plan   + Critical control points   + Critical control limits   + Monitoring procedures on the control limits   + Corrective actions   + Verification and validation   + Record keeping | * Written tests * Oral questioning * Observation |
| 1. Prepare to maintain dairy herd health | * Biosecurity measures and procedures * Occupational safety and health regulations | * Written tests * Observation * Oral questions * Third party reports * Interviewing |
| 1. Maintenance of dairy herd health | * Animal handling * Disease control measures * Types of external parasites * External parasites control methods   + Chemical   + Biological   + Integrated * Hoof care * Grooming * Animal welfare | * Observation * Written tests * Oral questions * Interviewing * Third party reports |
| 1. Evaluate maintenance of dairy herd health | * Physical signs of ill health * Communication | * Observation * Written tests * Oral questions * Interviewing * Third party reports |
| 1. Complete maintenance of dairy herd health | * Dairy equipment and farm structures hygiene * Waste disposal | * 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:** | | |
| * Holding crush * Ropes * Disinfectants * Navel clips * Scapels * Cleaning materials and equipment | * Acaricides * Plunge dip and spray race * Spayers * Weighing bands * Hoof triming tools, equipment and structures | * Waste management equipment and material * Grooming tools and equipment * Water * PPEs |