****

**REPUBLIC OF KENYA**

**COMPETENCY BASED MODULAR CURRICULUM**

**FOR**

**DAIRY FARM ATTENDANCE**

**KNQF LEVEL 3**

**ISCED PROGRAM CODE: 0811 254A**

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# FOREWORD

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

Reforms in the education sector are necessary to achieve Kenya Vision 2030 and meet the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution, and this resulted in the formulation of the Policy Framework for Reforming Education and Training in Kenya (Sessional Paper No. 14 of 2012). 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 the mode of delivery allow 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. For trainees to build their skills on foundational hands-on activities of the occupation, units of learning are grouped in modules. This has eliminated duplication of content and streamlined exemptions based on skills acquired as a trainee progresses in the up-skilling process, while at the same time allowing trainees to be employable in the shortest time possible through the acquisition of part qualifications.

It is my conviction that this curriculum will play a great role in developing competent human resources for the Agriculture Sector’s growth and development.

**PRINCIPAL SECRETARY**

**STATE DEPARTMENT FOR TVET**

**MINISTRY OF EDUCATION**

**PREFACE**

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

TVET Act, CAP 210A and Sessional Paper No. 1 of 2019 on Reforming Education and Training in Kenya for Sustainable Development emphasized the need to reform curriculum development, assessment, and certification. This called for a shift to CBET to address the mismatch between skills acquired through training and skills needed by industry, as well as increase the global competitiveness of the Kenyan labour force.

This curriculum has been developed in adherence to the Kenya National Qualifications Framework and CBETA standards and guidelines. The curriculum is designed and organized into Units of Learning with Learning Outcomes, suggested delivery methods, learning resources, and methods of assessing the trainee’s achievement. In addition, the units of learning have been grouped in modules to concretize the skills acquisition process and streamline upskilling.

I am grateful to all expert trainers and everyone who played a role in translating the Occupational Standards into this competency-based modular curriculum.

# 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 were received from expert trainers, institutions and organizations.

I recognize with appreciation the role of the Agriculture National Sector Skills Committee (NSSC) 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 everyone who participated in developing this curriculum.

I am convinced that this curriculum will go a long way in ensuring that individuals aspiring to work in the Agriculture Sector acquire competencies to perform their work more efficiently and effectively.

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# **ABBREVIATIONS AND ACRONYMS**

CR Core Competency

CU Curriculum

DA Dairy

DANIDA Danish International Development Agency

FM Farm Management

ISCED International Standard Classification of Education

KCSE Kenya Certificate of Secondary Education

KNQA Kenya National Qualifications Authority

KNQF Kenya National Qualification Framework

MoALF Ministry of Agriculture Livestock and Fisheries

MESPT Micro Enterprises Support Programme Trust

PPE Personal Protective Equipment

SSAC Sector Skills Advisory Committee

KEY TO UNIT CODE

**Sector / Industry**

**Sub Sector**

**Occupational Area**

**Version Control**

**Unit of Competence Number**

**ISCED level, Programme Orientation and Level of Completion**

xx

x

xxx

x

xx

x

# COURSE OVERVIEW

The dairy farm attendance Level 3 consists of competencies that an individual must have to perform operations in a dairy farm. It involves producing dairy forage, feeding dairy animals, milking dairy animals and rearing dairy young stock.

The units of learning comprising dairy farm attendance level 3 qualification consists of the following core units:

|  |  |  |
| --- | --- | --- |
| **ISCED UNIT CODE** | **UNIT NAME** | **DURATION(HOURS)** |
| 0811 241 02A | Dairy forage production  | 60 |
| 0811 241 05A | Feeding dairy animals | 60 |
| 0811 241 06A | Milking dairy animals  | 60 |
| 0811 241 07A | Dairy young stock rearing  | 80 |
|  | Industry Training  | 240 |
|  | **Total**  | **500** |

**Entry Requirements**

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

1. Kenya Certificate of Primary Education (KCPE)

**Or**

b) Equivalent qualifications as determined by relevant regulatory body

**Trainer’s qualification**

A trainer for this course should have a:

1. Possession of at least a level 5 qualification in dairy farm management or its equivalent.
2. License by TVETA.

**Industrial attachment**

An individual enrolled in this course will be required to undergo Industry training for a minimum period of 240 hours in the dairy farm establishment. The industrial training may be taken after completion of all units for those pursuing the full qualification or be distributed equally in each unit for those pursuing partial qualification. In the case of dual training model, industrial training shall be as guided by the dual training policy.

**Assessment**

The course shall be assessed formatively and summatively:

1. During formative assessment all performance criteria shall be assessed based on performance criteria weighting.
2. Number of formative assessments shall minimally be equal to the number of elements in a unit of competency
3. Assessment of basic and common competencies shall be integrated in the core units
4. Theoretical assessment shall be integrated in practical assessment and conducted orally in both formative and summative assessments.
5. Theoretical and practical weight shall be 10:90 respectively for each unit of learning.
6. Formative and summative assessments shall be weighted at 60% and 40% respectively in the overall unit of learning score
7. Assessment performance rating for each unit of competency shall be as follows:

|  |  |
| --- | --- |
| **MARKS**  | **COMPETENCE RATING** |
| 80 -100 | Attained Mastery |
| 65 - 79 | Proficient |
| 50 - 64 | Competent |
| 49 and below | Not Yet Competent |
| Y | Assessment Malpractice/irregularities |

1. Assessment for Recognition of Prior Learning (RPL) may lead to award of part and/or full qualification.

**Certification**

An individual will be issued with a Certificate of Competency upon demonstration of competence in a unit of competency. To be issued with the Kenya National TVET Certificate in dairy farm management level 3, one must have demonstrated competence in all the units of competency as given in qualification pack. Statement of Attainment maybe awarded upon demonstration of competence in a certifiable element within a unit.

This qualification shall be awarded by Qualification Awarding Institution.

## DAIRY FORAGE PRODUCTION

**UNIT CODE:** 0811 241 01A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Produce dairy forage

**Duration of Unit:** 60 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**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
| 1.  | Prepare to produce dairy forage | 15 |
| 2.  | Produce dairy forage | 30 |
| 3. | Complete dairy forage production | 15 |
| **Total** | **60** |

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

| **Learning Outcome** | **Content** | **Methods of assessment**  |
| --- | --- | --- |
| 1. Prepare to produce dairy forage
 | * 1. PPEs used in forage production
	2. Methods of land preparation
	3. Land preparation tools, implements and machinery
	4. Planting materials
		1. Types
		2. Preparation
	5. Soil conservation
	6. Environmental protection measures
	7. Occupational safety and health procedures
 | * Written tests
* Observation
* Oral questions
* Third party reports
* Interviewing
 |
| 1. Produce dairy forage
 | * 1. Forage types
		1. Pasture
		2. Fodder crops
		3. Multi-purpose trees
	2. Forage planting methods
		1. Direct planting
		2. Under sowing
		3. Over over sowing.
	3. Forage spacing requirements
		1. Seed rates
		2. Gapping
	4. Pest, weed and disease control
		1. Types
		2. Control methods
	5. Fertilizer application
		1. Types of fertilizer
		2. Application rates and methods
		3. Time
	6. Irrigation methods
		1. Overhead
		2. Furrow / canal
		3. Drip
 | * Observation
* Written tests
* Oral questions
* Product analysis
* Interviewing
 |
| 1. Evaluate dairy forage production
 | * 1. Forage quality and safety
		1. Crude protein
		2. Neural detergent fibre
		3. Moisture content
		4. Acid detergent fibre
		5. Digestibility
		6. Total digestible nutrients
		7. Metabolizable energy.
		8. Forage quantity forecasting
	2. Forage quantity
		1. Importance of forage yields
		2. Factors influencing forage yield.
	3. Forage production errors and rectification measures.
 | * Observation
* Written tests
* Oral questions
* Interviewing
 |
| 1. Complete dairy forage production
 | * 1. Forage conservation methods
		1. Hay making
		2. Standing hay.
		3. Silage making
	2. Waste disposal
		1. Types of waste
			1. Stem
			2. Leaves
			3. Weeds
		2. Methods of disposal
			1. Composting
			2. Mulching
			3. Green manure
			4. Animal feed
			5. Biogas production.
 | * 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
 |

##

## FEEDING DAIRY ANIMALS

**UNIT CODE:** 0811 241 02A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Feed dairy animals

**Duration of Unit:**60 hours

**Unit Description**

This unit specifies the competencies required to feed dairy animals. It involves preparing to feed dairy animals, feed dairy animals, evaluate dairy animal feeding and complete dairy animal feeding.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
| 1.  | Prepare to feed dairy animals | 15 |
| 2.  | Feed dairy animals | 15 |
| 3. | Evaluate dairy animal feeding | 15 |
|  | Complete dairy animal feeding | 15 |
| **Total** | **60** |

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

| **Learning Outcome** | **Content** | **Methods of assessment**  |
| --- | --- | --- |
| 1. Prepare to feed dairy animals
 | * 1. Protection Protectives Equipment.
		1. Gloves
		2. Gumboots
		3. Overall
		4. Face mask.
	2. Grouping of dairy animals
		1. Calves and kids
		2. Heifers and doelings
		3. Lactating animals (early, mid and late lactation)
		4. Dry animals
		5. Bulls, bucks, steers and wethers.
	3. Standards for dairy animal feeds
	4. Occupational safety and health procedures.
	5. Environmental protection measures.
 | * Written tests
* Observation
* Oral questions
* Third party reports
* Interviewing
 |
| 1. Feed dairy animals
 | * 1. Feed mixing methods.
		1. Separate concentrate feeding
		2. Total mixed rations.
		3. Partly mixed rations.
	2. Processing of feeds ingredients.
	3. Dairy animals feeding.
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party reports
 |
| 1. Evaluate dairy animal feeding
 | * 1. Feed intake evaluation.
	2. Feed sampling and collection
	3. Feed faults
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party reports
 |
| 1. Complete dairy animal feeding
 | * 1. Feeding structures and equipment hygiene
	2. Dairy feeding waste management
		1. Reduce
		2. Reuse
		3. recycle
 | * 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
 |

## MILKING DAIRY ANIMALS

**UNIT CODE:** 0811 241 03A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Milk dairy animals

**Duration of Unit:** 60 hours

**Unit Description**

This unit specifies the competencies required to milk dairy animals. It involves preparing to milk dairy animals, milking dairy animals and complete dairy animal milking.

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
| 1.  | Prepare to milk dairy animals  | 15 |
| 2.  | Milk dairy animals  | 30 |
| 3. | Complete dairy animal milking  | 15 |
| **Total** | **60** |

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

| **Learning Outcome** | **Content** | **Methods of assessment**  |
| --- | --- | --- |
| 1. Prepare to milk dairy animals
 | * 1. Milking tools and equipment
		1. Milking buckets
		2. Sieve
		3. Cans
		4. Mastitis test kit
		5. Strip cup
		6. Teat dip cup
		7. Portable milking machine
	2. Milking materials and supplies
		1. Milking salve
		2. Udder clothes
		3. Mastitis testing reagents
		4. Teat dip solution
		5. Restraining rope
	3. Milking animals
		1. Dairy cattle
		2. Dairy goats
		3. Camels
	4. PPEs used in milking
		1. Hair net
		2. Gumboots
		3. Face mask
		4. overall
	5. Occupational safety and health procedures
 | * Written tests
* Observation
* Oral questions
* Third party reports
* Interviewing
 |
| 1. Milk dairy animals
 | * 1. Animal restraining techniques
		1. Crush
		2. Milking hopples
	2. Hygienic milk production
	3. Udder preparation
	4. Mastitis test and prevention
		1. Califonia mastitis test
		2. Strip cup
	5. Milking methods, techniques and routine
		1. Hand milking
		2. Machine milking
	6. Post-milking activities
		1. Udder disinfection
		2. Milk weighing
		3. Milk sieving
	7. Milk storage
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party reports
 |
| 1. Evaluate dairy animal milking
 | * 1. Milk let down process
	2. Hygienic practice of milking parlor and equipment
	3. Milking machine maintenance
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party report
 |
| 1. Complete dairy animal milking
 | * 1. Milking parlour and equipment cleaning methods and storage
	2. Documentation of milk yield
	3. 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:** |
| * 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 STOCK REARING

**UNIT CODE:** 0811 241 04A

**Relationship to Occupational Standards**

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

**Duration of Unit:**80 hours

**Unit Description**

This unit specifies the competencies required to rear dairy young stock. It involves preparing to rear dairy young stock, rear dairy young stock, evaluate rearing of dairy young stock and complete rearing of dairy young stock

**Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
| 1.  | Prepare to rear dairy young stock | 20 |
| 2.  | Rear dairy young stock | 30 |
| 3. | Evaluate rearing of dairy young stock | 15 |
| 4 | Complete rearing of dairy young stock | 15 |
| **Total** | **80** |

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

| **Learning Outcome** | **Content** | **Methods of assessment**  |
| --- | --- | --- |
| 1. Prepare to rear dairy young stock
 | * 1. Young stock management tools, equipment, materials and supplies
		1. dentification
		2. Castration
		3. Disbudding / dehorning
		4. Hoof trimming
		5. Young stock handling
		6. Weighing
	2. Structures for managing young stock
	3. Steaming up
	4. Parturition signs
	5. Occupational safety and health standards
 | * Written tests
* Observation
* Oral questions
* Third party reports
* Interviewing
 |
| 1. Rear dairy young stock
 | * 1. Young stock nutritional requirements
		1. Colostrum feeding
		2. Foster feeding
		3. Roughage feeding
	2. Identification methods
		1. Ear tagging
		2. Ear notching
		3. Tattooing
		4. Branding
		5. Electronic transponders
	3. Young stock housing
	4. Young stock handling and restraining
	5. Young stock health care
	6. Disbudding methods
		1. Hot iron
		2. Chemical (caustic soda)
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party reports
 |
| 1. Evaluate rearing of dairy young stock
 | * 1. Young stock weighing
	2. Parturition process
		1. Dystocia
			1. Types of dystocia
			2. Causes of dystocia.
 | * Observation
* Written tests
* Oral questions
* Interviewing
* Third party reports
 |
| 1. Complete rearing of dairy young stock
 | * 1. Methods of castration
		1. Open castration
		2. Closed castration
	2. Weaning process
	3. Housing hygiene
	4. 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:** |
| * 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
 |