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**THE REPUBLIC OF KENYA**

**COMPETENCY-BASED MODULAR CURRICULUM**

**FOR**

**POULTRY LAYER PRODUCTION**

**LEVEL: 4**

**ISCED CODE: 0811 354 A**

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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.

**ACKNOWLEDGEMENT**

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

|  |  |
| --- | --- |
| 2D | 2 Dimensional |
| 3D | 3 Dimensional |
| ATVET | Agricultural Technical and Vocational Education and Training |
| AU - IBAR | African Union – InterAfrican Bureau for Animal Resources |
| CAADP | Comprehensive Africa Agricultural Development Programme |
| CAD | Computer Assisted Drawing |
| CBET | Competency Based Education and Training |
| CDACC | Curriculum Development Assessment and Certification Council |
| CEO | Chief Executive Officer |
| DACUM | Develop a Curriculum |
| DVS | Director of Veterinary Services |
| EMCA | Environmental Management and Conservation Act |
| EMS | Environmental Management Systems |
| FSDRP | Food Security and Drought Resilience Programme |
| FSP | Food Security Project |
| GDP | Gross Domestic Product |
| GMP | Good Manufacturing Practices |
| HACCP | Hazard Analysis Critical Control Point |
| ICT | Information Communication Technology |
| IM | Intra Muscular |
| KCSE | Kenya Certificate of Secondary Education |
| KNQA | Kenya National Qualifications Authority |
| KNQF | Kenya National Qualifications Framework |
| KSPCA | Kenya Society for the Care and Protection of Animals |
| LCD | Liquid Crystal Display |
| MAP | Modified Atmosphere Packaging |
| MoALF&I | Ministry of Agriculture, Livestock, Fisheries and Irrigation |
| MoE | Ministry of Education |
| NCA | National Construction Authority |
| NEMA | National Environmental Management Authority |
| NEPAD | New Partnerships for African Development |
| NGO | Non-Governmental Organization |
| NPCA | NEPAD Planning and Coordinating Agency |
| OIE | World Organization for Animal Health |
| OS | Occupational Standard |
| OSH | Occupational Safety and Health |
| PPE | Personal Protective Equipment |
| PSSAC | Poultry Sector Skills Advisory Committee |
| SOP | Standard Operation Procedures |

**KEY TO ISCED UNIT CODE**



# COURSE OVERVIEW

Poultry Layer Production Level 4 qualification consists of competencies that an individual must have to produce layer chicken. It involves poultry structures construction, layer chick brooding management, growing poultry growers, managing laying poultry, producing poultry feeds and managing poultry health and welfare.

The units of learning comprising Poultry Layer Production Level 4 qualification include:

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit Code** | **Unit Title** | **Duration**  **in Hours** | **Credit Factor** |
| **MODULE I** | | | |
| 0732 251 01 A | Poultry structures construction | 100 | 10.0 |
| 0811 251 02 A | Layer chick brooding management | 120 | 12.0 |
| **Sub total** | | **220** | **22** |
| **MODULE II** | | | |
| 0811 351 03 A | Management of Poultry Growers | 80 | 8.0 |
| 0811 351 04 A | Management of Laying Poultry | 80 | 8.0 |
| 0811 351 05 A | Production of Layer Feeds | 100 | 10.0 |
| 0811 351 06 A | Management of Layer Health and Welfare | 120 | 12.0 |
| **Sub total** | | **380** | **38** |
| **Industrial Training** | | **320** | **32.0** |
| **Grand Total** | | **920** | **92.0** |

**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- or E

**Or**

1. Equivalent qualifications as determined by relevant regulatory body

**Trainer Qualification**

Qualifications of a trainer for this course include:

1. Possession of at least Poultry Production level 5 or level 5 in related trade area; and
2. License by TVETA

**Industry Training**

An individual enrolled in this course will be required to undergo industry training for a minimum period of 320 hours in the agriculture sector. 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 part qualification. In the case of dual training model, industrial training shall be as guided by the dual training policy.

**Assessment for level 4**

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**

A candidate will be issued with a Certificate of Competency upon demonstration of competence in a Unit of Competency. To attain Kenya National TVET Certificate in Layer Poultry Production Level 4, the candidate must demonstrate competence in all the Units of Competency as given in the qualification pack. Statement of Attainment certificate may be awarded upon demonstration of competence in certifiable element within a unit.

These certificates will be issued by Qualification Awarding Institution.

# MODULE I

## POULTRY SRUCTURES CONSTRUCTION

**UNIT CODE:** 0732 251 01A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Construct Poultry Structures

**Duration of Unit**: 100 hours

**Unit Description**

This unit covers the competencies required to construct poultry structures. It involves designing of poultry structures, acquiring construction materials, and managing house construction.

**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 construct poultry structures | 20 |
| 2. | Construct poultry structures | 30 |
| 3. | Install poultry house structures | 30 |
| 4. | Equip poultry house | 20 |
| **Total** | | **100** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of Assessment** |
| 1. Prepare and plan to construct poultry structures | * 1. Types of poultry structures      1. Brooder      2. Rearing house      3. Store   2. Factors determining type of poultry house      1. Type of birds      2. Production system   3. Site preparations   4. Construction materials      1. Types      2. Quality      3. Storage   5. Personal Protection Equipment and Apparel (PPEs) required in poultry house construction | * Written tests * Observation * Oral questions * Third party report |
| 1. Construct and install poultry house structures | * 1. Poultry house layout      1. Area measurement      2. Pegging   2. Poultry house foundation      1. Excavation      2. Mixing ratios of mortar      3. Stone laying   3. Construction of poultry house parts      1. Floor      2. Wall      3. Roof   4. Construction of Security and Biosecurity measures      1. Predators barriers      2. Vehicle and human traffic controls   5. Construction of accessory structures      1. Perches      2. Laying boxes      3. Foot bath      4. Cages   6. Installation of movable poultry house structures   7. Environmental protection measures observed during poultry house construction      1. NEMA certification | * Written tests * Observation * Oral questions * Third party report |
| 1. Equip poultry house | * 1. Equipment and materia**l** necessary in a poultry house      1. Types and use      2. Specifications and quantity   2. Factors considered in installation of equipment and materials in poultry house      1. Time      2. pattern      3. Safety precautions      4. Number of birds   3. Testing-running of the equipment      1. Heat source      2. Waterers      3. Feeders      4. Ventilation      5. Lighting | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project and report writing |

**Suggested Methods of instructions**

* Demonstration
* Practice by the trainee
* Field trips
* Discussions
* Direct instruction
* Case studies
* Simulation
* Audio-visual aids
* Modelling

**Recommended Resources for 25 Trainees**

|  |  |  |
| --- | --- | --- |
| Functional poultry farm with the following: | | |
| General Resources | Tools and Equipment | Materials and Supplies |
| * Poultry house * Equipments * Brooder * Brooder thermometer * Hygrometer * Waterers * Feeders * Complete Battery cage system * Bedding materials * Buckets * Grit / shell container * Sand bath | * Brooder * Store * Aceesory structures * Saw * Stones * Sand * Cement * Ballast * Timber * Slashers * Crowbar | * Hammer * Nails * String * Wooden pegs * Tape measures * Barbed/chain link * Hoe * Shovels * Wheel burrow |

|  |  |  |
| --- | --- | --- |
| * 25 Desktop computers/laptops | 25 mobile phones | Flashcards |
| * Internet connection | Telephone | Flip charts |
| * 1 Projector * 1 Printer |  | 2 packets of assorted colors of whiteboard marker pens |
| * 1 Whiteboard |  | Printing papers |
| * 5 Business plan templates * 1 Overhead projectors * Internet * Video clips * 5 Newspapers and Handouts * 5 Business Journals |  | * 25 sets of Writing materials Stationery * Charts |

## LAYER CHICK BROODING MANAGEMENT

**UNIT CODE:** 0811 251 02A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Manage layer chick brooding

**Duration of Unit:** 120 hours

**Unit Description**

This unit covers the competencies required to brood chicks. It involves preparing chick brooder, feeding brooding chicks, managing brooder house micro climate, maintaining brooder hygiene, performing chick vaccination, controlling poultry vermin, controlling poultry predators and monitoring chick performance.

**Summary of Learning Outcomes**

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

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Prepare chick brooder | 20 |
|  | Feed brooding chicks | 20 |
|  | Manage brooder house micro climate | 10 |
|  | Maintain brooder hygiene | 10 |
|  | Perform chick vaccination | 10 |
|  | Control poultry vermin | 10 |
|  | Control poultry predators | 10 |
|  | Monitor chick performance | 30 |
| **Total** | | **120** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Methods of Assessment** |
| 1. Prepare chick brooder | * 1. Suitable brooder construction materials      1. Cardboard      2. Wooden pegs      3. Litter material   2. Cleaning and disinfection of brooder   3. Types of bedding materials   4. Suitable bedding materials   5. Sterilization of bedding materials   6. Cleaning and sterilization of brooder equipment.   7. Installation of brooder equipment      1. Types of brooder equipment      2. Standard operation of the equipment      3. Time schedule for placement of various equipment | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project and report writing |
| 1. Feed brooding chicks | * 1. Acquire day-old chicks   2. Types of chicks feed   3. Feeding requirements of chicks      1. Amount      2. Feeding schedule      3. Ad libitum feeding      4. Light schedule   4. Water requirements of chicks      1. Quality      2. Quantity | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project and report writing |
| 1. Manage brooder house micro climate | * 1. Methods of assessing micro-climatic variations in brooder house      1. Use of tools and equipment      2. Animal behaviour      3. Human senses      4. Non-conventional aids   2. Corrective measures for micro-climate variations      1. Temperature      2. Humidity      3. Ventilation      4. Lighting | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project and report writing |
| 1. Maintain brooder hygiene | * 1. Bio-safety practices required in brooding   2. Assessment of Bio-safety conformity | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project and report writing |
| 1. Perform chick vaccination | * 1. Chick vaccination schedule   2. Handling and storage of vaccines   3. Equipment and tools required for vaccination.   4. Vaccination procedures.      1. Pre- vaccination preparation      2. Actual vaccination   5. Chick vaccination records | * Written tests * Observation * Oral questions * Third party report * Interviewing |
| 1. Control poultry vermin | * 1. Identification of vermin      1. Lice      2. Mites      3. Fleas   2. Vermin control measures      1. Chemical      2. Structural related      3. Cultural practices | * Written tests * Observation * Oral questions * Third party report * Interviewing |
| 1. Control poultry predators | * 1. Types of predators      1. Man      2. Cats      3. Dogs      4. Mongoose      5. Hawks      6. Rats   2. Predator control measures for brooder house      1. Chemical      2. Mechanical      3. Biological      4. Structural –related controls | * Written tests * Observation * Oral questions * Third party report * Interviewing |
| 1. Monitor chick performance | * 1. Chick behaviour      1. Feeding behaviour      2. Activity   2. Methods of assessing growth performance of chicks      1. Weighing      2. Physical appearance (feathering)   3. Poultry vices      1. Types      2. Control measure   4. Culling of chicks      1. Culling criteria.      2. Stages of culling | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project and report writing |

**Suggested Methods of instructions**

* Project
* Demonstration by trainer
* Practice by the trainee
* Discussions
* Direct instruction
* Case study
* Audio –visual aids

**Recommended Resources for 25 Trainees**

|  |  |  |
| --- | --- | --- |
| Functional Brooder house with the following: | | |
| * Day old chicks * Heat source * Chick feeders * Chick drinkers * Light source | * Brooder guard * Curtains * Brooder thermometer * Hygrometer * Beddings | * Weighing scale * Chick feeds * Water * Vaccines * Vaccination equipment |

# MODULE II

## GROWER POULTRY MANAGEMENT

**ISCED UNIT CODE:** 0811 341 03 A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Manage Poultry Growers

**Duration of Unit:** 80 hours

**Unit Description**

This unit specifies the competencies required to manage poultry growers. It involves sanitizing grower house, setting-up grower house equipment and structures, transferring poultry to growers’ house, feeding growing poultry, managing growers house litter, poultry house micro climate and growers health. It also includes managing biosafety measures and monitoring growing poultry.

**Summary of Learning Outcomes**

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

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Sanitize growers house | 5 |
|  | Set-up grower house equipment and structures | 10 |
|  | Transfer poultry to growers’ house | 5 |
|  | Feed growing poultry | 10 |
|  | Manage growers house litter | 15 |
|  | Manage poultry house micro climate | 15 |
|  | Manage growers health | 10 |
|  | Manage biosafety measures | 5 |
|  | Monitor growing poultry | 5 |
| **Total** | | **80** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Sanitize growers house | * 1. Litter removal and disposal   2. House cleaning      1. Types of detergents      2. Tools required in cleaning      3. Cleaning procedure   3. House disinfection      1. Types of disinfectants      2. Factors determining choice of disinfectants      3. Factors determining effectiveness of disinfectants      4. Tools required in disinfection      5. Disinfection procedure | * Written tests * Observation * Oral questions * Third party report * Interviewing |
| 1. Set-up grower house equipment and structures | * 1. Equipment and structures required in a grower house   2. Types      1. Perches      2. Laying nests      3. Feeders      4. Drinkers      5. Catching hooks      6. Weighing scales   3. Specifications for the structures and equipment      1. Number      2. Dimensions   4. Improvised feeders and drinkers      1. Designs      2. Materials | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project |
| 1. Transfer poultry to growers’ house | * 1. Transferring the growers      1. Method and equipment used in the transfer of growers      2. Handling precautions      3. Stocking density      4. Separation of chicks and growers   2. Factors considered in culling growers | * Written tests * Observation * Oral questions * Third party report * Interviewing |
| 1. Feed growing poultry | * 1. Feed requirements of growers      1. Nutritional quality of feed      2. Amount      3. Feeding schedule   2. The role of grit   3. Water requirements of growers      1. Quality      2. Quantity | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project |
| 1. Manage growers house litter | * 1. Role of litter in poultry house   2. Factors determining choice of litter material   3. Common litter defects      1. Wet litter      2. Dusty litter   4. Wet litter      1. Causes of wet litter      2. Dangers associated with wet litter      3. Corrective measures for wet litter   5. Dusty litter      1. Dangers associated with dusty litter      2. Corrective measures for dusty litter   6. General litter maintenance practices      1. Adequate ventilation      2. Turning      3. Litter addition | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project |
| 1. Manage poultry house micro climate | * 1. Micro-climatic requirements in grower house      1. Ventilation      2. Humidity      3. Temperature      4. Light   2. Lighting regime for growers   3. Methods of assessing micro-climatic variations in grower house      1. Use of tools and equipment      2. Human senses      3. Non-conventional aids   4. Corrective measures for micro-climate variations      1. Temperature      2. Humidity      3. Ventilation      4. Lighting | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project |
| 1. Manage growers health | * 1. Common diseases affecting growers   2. Grower vaccination schedule   3. Handling and storage of vaccines   4. Equipment and tools required for vaccination.   5. Vaccination procedures      1. Types of vaccines      2. Pre- vaccination preparation      3. Actual vaccination   6. Post-vaccination behaviour in growers      1. Normal      2. Abnormal   7. Grower vaccination records | * Written tests * Observation * Oral questions * Third party report * Interviewing |
| 1. Manage biosafety measures | * 1. Biosafety structures/ facilities to consider in grower house   2. Biosafety practices required in grower house      1. Assessment of Bio-safety conformity      2. Staff Monitoring | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project |
| 1. Monitor growing poultry | * 1. Growth and development pattern in growers      1. Feathering      2. Combs and wattles      3. Weight gain   2. Factors influencing growth in growers      1. Genetics      2. Feed      3. Environment   3. Grower behaviour      1. Feeding behaviour      2. Activity      3. Vices   4. Grower vices      1. Types      2. Causes      3. Control measures   5. Methods of assessing growth performance of chicks      1. Weighing      2. Physical appearance   6. Performance assessment equipment and tools. | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project |

**Suggested Methods of Instruction**

* Project
* Demonstration by trainer
* Practice by the trainee
* Discussions
* Direct instruction
* Case study
* Audio –visual aids

**Recommended Resources**

|  |  |  |
| --- | --- | --- |
| Functional poultry unit with the following: | | |
| * Shovel   + Broom   + Wheel burrow   + Sanitizing agents   + Brush   + Detergents   + Knapsack sprayer   + Litter   + Rake   + Hammer   + Timber   + Nails | * Saw   + Catching hook   + Weighing scale   + Jerry can   + Crates   + Feeders   + Drinkers   + Grit container   + Grit   + Water   + Feed   + Vaccine | * + Multivitamins   + Syringe   + Needles   + Cool box   + Freezer   + Disinfectant |

## MANAGEMENT OF LAYING POULTRY

**ISCED UNIT CODE:** 0811 351 04A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Manage Laying Poultry

**Duration of Unit:** 80 hours

**Unit Description**

This unit specifies the competencies required to manage laying poultry. It involves feeding laying birds, cleaning feeding and watering equipment, maintaining suitable litter condition, managing poultry house micro climate and maintaining layers health. It also entails monitoring poultry performance, handling poultry eggs and maintaining poultry records.

**Summary of Learning Outcomes**

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

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Feed laying birds | 10 |
|  | Clean feeding and watering equipment | 10 |
|  | Maintain suitable litter condition | 10 |
|  | Manage poultry house micro climate | 10 |
|  | Maintain layers health | 10 |
|  | Monitor poultry performance | 15 |
|  | Handle poultry eggs | 10 |
|  | Maintain poultry records | 5 |
| **Total** | | **80** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Feed laying birds | * 1. Feed requirements of layers      1. Nutritional quality of feed      2. Amount      3. Feeding schedule   2. Form of diet      1. Various forms of layer diets      2. Factors determining choice of form of diet   3. Feeding with grit      1. Role of grit in digestion      2. Grit materials   4. The importance of calcium in layer diets   5. Feeding with green feedstuffs   6. Water requirements of layers      1. Quality      2. Quantity   7. Feeders and waterers      1. Design      2. Number and pattern of installation      3. Improvised feeders and waterers | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project |
| 1. Clean feeding and watering equipment | * 1. Types of detergents and sanitisers for feeders and waterers   2. Methods of sanitising      1. Heat      2. Steam      3. Hot water      4. Chemical      5. Sun drying   3. Cleaning procedures for feeders and waterers   4. Sanitising procedures for feeders and waterers. | * Written tests * Observation * Oral questions * Third party report * Interviewing |
| 1. Maintain suitable litter condition | * 1. Role of litter in poultry house   2. Factors determining choice of litter material   3. Common litter defects      1. Wet litter      2. Dusty litter   4. Wet litter      1. Causes of wet litter      2. Dangers associated with wet litter      3. Corrective measures for wet litter   5. Dusty litter      1. Dangers associated with dusty litter      2. Corrective measures for dusty litter   6. General litter maintenance practices      1. Adequate ventilation      2. Turning   - litter addition | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project |
| 1. Manage poultry house micro climate | * 1. Micro-climatic requirements in layer house      1. Ventilation      2. Humidity      3. Temperature      4. Light   2. Corrective measures for micro-climate variations   3. Lighting regime for layers   4. Methods of assessing micro-climatic variations in layer house      1. Use of tools and equipment      2. Human senses      3. Non-conventional aids | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project |
| 1. Maintain layers health | * 1. Common diseases affecting layers   2. Layer vaccination schedule   3. Handling and storage of vaccines   4. Equipment and tools required for vaccination.   5. Vaccination procedures      1. Types of vaccines      2. Pre-vaccination preparation      3. Actual vaccination      4. Post-vaccination behaviour in layers         1. Normal         2. Abnormal      5. Layer vaccination records | * Written tests * Observation * Oral questions * Third party report * Interviewing |
| 1. Monitor poultry performance | * 1. Growth and development pattern in layers      1. Feathering      2. Combs and wattles      3. Physical behaviour   2. Layer behaviour      1. Feeding behaviour      2. Activity      3. Vices   3. Layer vices      1. Types      2. Causes      3. Control measures   4. Factors influencing egg quantity and quality      1. Genetics      2. Feed      3. Environment   5. Evaluation of egg production performance      1. Laying percentage      2. Shell strength      3. Egg size      4. Egg abnormalities   6. Culling of non-layers      1. Importance      2. Criteria/ indicators used in culling   7. Broodiness in layers      1. Causes      2. Control for broodiness   8. Moulting      1. Causes      2. Force moulting | * Written tests * Observation * Oral questions * Third party report * Interviewing * Project |
| 1. Handle poultry eggs | * 1. Factors that can affect the quality of laid eggs      1. Tools and equipment required for egg handling      2. Cleanliness      3. Storage conditions      4. Egg characteristics   2. Recommendations regarding egg collection      1. Intervals      2. Equipment      3. precautions   3. Sorting and grading of eggs      1. Equipment      2. Importance      3. Labelling   4. Cleaning of eggs      1. Cause of dirt and contamination      2. cleaning material      3. cleaning methods and precautions   5. Packaging of eggs      1. Packaging material      2. Packaging precautions.   6. Branding of Poultry      1. Importance of branding      2. Methods of labelling      3. branding equipment | * Written tests * Observation * Oral questions * Third party report * Interviewing |
| 1. Maintain poultry records | * 1. Importance of poultry records   2. Types of poultry records   3. Storage of poultry records | * Written tests * Observation * Oral questions * Third party report * Interviewing |

**Suggested Methods of Instruction**

* Project
* Demonstration by trainer
* Practice by the trainee
* Discussions
* Direct instruction
* Case study
* Audio –visual aids
* Direct instruction

**Recommended Resources**

|  |  |  |
| --- | --- | --- |
| Functional poultry unit with the following: | | |
| * Shovel   + Broom   + Wheel burrow   + Sanitizing agents   + Brush   + Detergents   + Knapsack sprayer   + Litter   + Rake   + Hammer   + Timber   + Nails   + Computer   + Printer | * Saw   + Catching hook   + Weighing scale   + Jerry can   + Crates   + Feeders   + Drinkers   + Grit container   + Grit   + Water   + Feed   + Vaccine   + Stationery | * + Multivitamins   + Syringe   + Needles   + Cool box   + Freezer   + Disinfectant   + Candles   + Torch   + Egg crates   + Egg trays   + Cloth   + Labels   + Branding machine |

## PRODUCTION OF LAYER FEED

**ISCED UNIT CODE:** 0811 351 05 A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Produce Layers Feed

**Duration of Unit:** 100 hours

**Unit Description**

This unit specifies the competencies required to produce layers feed. It involves acquiring layer feed ingredients, processing layer feed ingredients, mixing the feed ingredients and storage of formulated feed

**Summary of Learning Outcomes**

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

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
| 1. | Acquire layers feed ingredients | 30 |
| 2. | Process layers feed ingredients | 30 |
| 3. | Mix layers feed ingredients | 30 |
| 4. | Store layers feed | 10 |
| **Total** | | **100** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Acquire layers feed ingredients | * 1. Methods of feed formulation      1. Pearson square      2. Step by step      3. Trial and error      4. Computer simulation   2. Factors to consider when sourcing feed ingredients      1. Cost      2. Availability      3. Nutritional values      4. Ability to test quality      5. Toxins and anti-nutritive factors      6. Competition with humans   3. Sources and types of nutrients   4. Feedstuff sampling procedures   5. Nutrient content of feedstuff   6. Appraisal methods for feedstuff quality   7. Types of feed packaging materials   8. Labelling requirements for feed   9. Handling and storage methods of feed and feedstuff | * Observation * Written tests * Oral questions * Interviewing * Third party report |
| 1. Process layers feed ingredients | * 1. Processing methods for feed ingredients      1. Drying      2. Roasting or boiling      3. Grinding      4. Dehulling or dehusking      5. Oil extraction (pressing or solvent)   2. Types of mills | * Observation * Written tests * Oral questions * Interviewing * Third party report |
| 1. Mix layers feed ingredients | * 1. Mixing methods      1. Manual      2. Mechanical   2. Types of mixers      1. Vertical      2. Horizontal      3. Transverse   3. Forms of feed presentation   4. Post mixing processing      1. Pelleting      2. Crumbing | * Observation * Written tests * Oral questions * Interviewing * Third party report |
| 1. Store layers feed | * 1. Packaging and sealing methods   2. Post packaging labelling   3. Feed storage methods      1. Bulked      2. Bagged   4. Feed storage conditions | * 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 layers farm or feed processing plant with the following: | | |
| * Tractors * Trailer * Hammer mills * Grinding mills * Pelleting machines * Oil pressers or extraction solvents * Feed mixers * Poultry feedstuff * Detergents * Fumigants | * Water * Packaging materials * Labels or labelling material * Feed stores * Stationery * Weighing balances * Calculators and / or computers * Pest control equipment and materials | * Sampling kits * Feedstuff nutrient content tables * Gunny bags * Sealing twines or threads * Sealing machines * PPEs * Livestock production manuals * Journal of poultry science |

## MANAGEMENT OF LAYER HEALTH AND WELFARE

**ISCED UNIT CODE:** 0811 341 06 A

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Manage Poultry Health and Welfare

**Duration of Unit:** 120 hours

**Unit Description**

This unit specifies the competencies required to manage poultry health and welfare. It involves maintaining poultry biosecurity, acquiring poultry health equipment and materials, managing poultry vaccination and controlling poultry parasites. It also entails managing poultry diseases and vices and maintaining poultry health records.

**Summary of Learning Outcomes**

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

|  |  |  |
| --- | --- | --- |
| **S/No** | **Learning Outcomes** | **Duration (Hours)** |
|  | Maintain poultry biosecurity | 20 |
|  | Acquire poultry health equipment and materials | 20 |
|  | Manage poultry vaccination | 20 |
|  | Control poultry parasites | 25 |
|  | Manage poultry diseases and vices | 25 |
|  | Maintain poultry health records | 10 |
| **Total** | | **120** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Maintain poultry biosecurity | * 1. Biosecurity in a poultry farm      1. Measures      2. Regulatory bodies   2. Designing biosecurity structures and equipment installation      1. Boundary fence (electric or stone wall)      2. Gate      3. Entry showers, both at the gate and at the house sites      4. Foot bathes and vehicle sprayers      5. Hand washing gadgets      6. Post mortem rooms      7. Mortality disposal pits      8. Rodent and pest control traps   3. Occupational safety and health procedures in poultry farm   4. Poultry waste management      1. Litter (droppings, feathers, spilt feed, dead birds)      2. Other wastes (plastics, glass, paper, metals and fluids) | * Written tests * Observation * Oral questions * Third party report * Interviewing * Case study reports |
| 1. Acquire poultry health equipment and materials | * 1. Flock health management tools, equipment, materials and supplies      1. Sprayers      2. De-beakers      3. Chicken catching rods   2. Maintenance: cleaning, trouble shooting, servicing and repairs | * Written tests * Observation * Oral questions * Third party report * Interviewing |
| 1. Manage poultry vaccination | * 1. Factors considered when developing poultry vaccination schedule      1. Disease prevalence      2. Disease severity      3. Economic importance   2. Poultry Immunology   3. Types of vaccines (live attenuated, inactivated, vectored/recombinant)   4. Reconstitution of poultry vaccines   5. Vaccine handling   6. Refrigeration methods   7. Vaccination sites and routes   8. Vaccine intake   9. Animal welfare regulations   10. Poultry handling   11. Recording vaccination details       1. Type of vaccine       2. Type of disease vaccinated against       3. Age of poultry       4. Date and time of vaccination       5. Date of manufacture and expiry of vaccine       6. Vaccine source and batch number       7. Route of vaccine administration (IM, wing stab, sub cutaneous, intra nasal, intra ocular or spray, follicular swabbing, drinking water application, scarification)       8. Number of birds vaccinated       9. Identification of birds (flock, type, breed) | * Observation * Written tests * Oral questions * Interviewing * Third party report |
| 1. Control poultry parasites, pests and predators | * 1. External and internal poultry parasites      1. Types - Internal (round worms, tape worms); External(mites, soft ticks, fleas)      2. Life cycle      3. Symptoms of infestation      4. Prevention and control measures   2. Poultry pests and predators      1. Types      2. Control measures | * Observation * Written tests * Oral questions * Interviewing * Third party report |
| 1. Manage poultry diseases and vices | * 1. Poultry gross anatomy and basic physiology   2. Normal poultry behaviour   3. General signs of ill health in poultry      1. Ante mortem observation      2. Post-mortem observation   4. Common poultry diseases      1. Types         1. Viral: Newcastle, Fowl pox, Gumboro / Infectious Bursal Disease, Mareks Disease, Infectious Bronchitis         2. Bacterial: Fowl typhoid, Chronic Respiratory Disease complex, Infectious Coryza and Collibacilosis (omphalitis and yolk sac infection)         3. Protozoal: Coccidiosis         4. Metabolic / nutritional disorders: Ascites/ water belly, gout and toxic fat syndrome         5. Poisoning: fungal or chemical      2. Causes      3. Symptoms      4. Prevention and control measures   5. Zoonotic poultry diseases: (Sallmonelosis, Listeriosis, Campylobacter)   6. Poultry vices      1. Types of vices      2. Prevention and control measures   7. Collection of monitoring and diagnostic samples   8. Animal welfare      1. Poultry handling and care      2. Transportation      3. Regulations | * Observation * Written tests * Oral questions * Interviewing * Third party report |
| 1. Maintain poultry health records | * 1. Importance of records   2. Types of health records      1. Vaccination      2. Deworming      3. Treatment      4. Routine health management practices (de-beaking, culling)   3. Record keeping procedures | * Observation * Written tests * Oral questions * Interviewing |

**Suggested Methods of Instruction**

* Project
* Demonstration by trainer
* Practice by the trainee
* Field trips
* Discussions
* Direct instruction
* Electronic audio-visual presentations
* Simulations

**Recommended Resources**

|  |  |  |
| --- | --- | --- |
| Functional poultry farm with the following: | | |
| General Resources | Tools and Equipment | Materials and Supplies |
| * Stationery (pen and sketching books) * Poultry shackles * Scapels * Cleaning materials and equipment * Disinfectants * Sanitizers * Disposal pits * Weighing scales * Debeaking machine * Wing stab needles * Strategic poultry drugs – preventative and emergency | * Automatic vaccination syringes * Syringes and needles * Vaccines * Poultry dewormers * Coccicidals * Poultry acaricides * Poultry dusts * Footbaths * Spayers * Waste management equipment and material * Litter rakes * Litter bins * Rodenticides * Rodent control traps | * Flock health records * Water * PPEs * Standard work place procedures * Animal diseases act Cap 365, legal notice 47 of 1985 * NEMA regulations and audits * Livestock Production Manual |

|  |  |  |
| --- | --- | --- |
| * 25 Desktop computers/laptops | 25 mobile phones | Flashcards |
| * Internet connection | Telephone | Flip charts |
| * 1 Projector * 1 Printer |  | 2 packets of assorted colors of whiteboard marker pens |
| * 1 Whiteboard |  | Printing papers |
| * 5 Business plan templates * 1 Overhead projectors * Internet * Video clips * 5 Newspapers and Handouts * 5 Business Journals |  | * 25 sets of Writing materials Stationery * Charts |