****

**REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARD**

**FOR**

**POULTRY (BROILER) PRODUCTION OPERATOR**

**KNQF LEVEL: 3**

**ISCED CODE: 0811 254 B**

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# FOREWORD

Agriculture plays an important role in Kenya’s economy. This importance is reflected in the positive correlation between growth in the agricultural sector and that of the national economy. Kenya’s economy registered a growth of 3.3% between 2013 and 2014; agriculture was the leading sector which contributed 27.3% to the Gross Domestic Product (GDP) in 2014. In this regard, crops, animal production, and fishing and aquaculture contributed 19.7%, 4.9% and 0.8% respectively (25.4%), while the balance of 1.9% came from forestry and other support activities. Like most countries in Africa, majority (61%) of Kenya’s population rely on agriculture for employment despite the challenges of climate change, soil degradation and increasing population pressure. In order to enhance the productivity of the work force and ensure a productive and innovative agricultural sector, as well as food security, meaningful education and training of all people involved is of utmost importance.

In the past Agricultural Technical and Vocational Education and Training (ATVET) did not always receive adequate attention from policy-makers. The education system emphasized on acquiring knowledge rather than skills development. This resulted to most farmers and the stakeholders in agriculture lacking the requisite skills. Current reforms in the education system aim at addressing this challenge by reforming the curriculum, its delivery and its assessment. These reforms can only be achieved through Competency Based Education and Training (CBET) approach. The reforms demands for a competency based curriculum which is a tool that will aid in the development of skills, knowledge and attitudes of the farmers. Such training will improve crop and animal husbandry skills which will in turn contribute to increased productivity and improvement of agriculture in the country. Ideally, this education and training will not only include farmers, but all professions involved in agriculture

These Occupational Standards as such presents us with a base for developing curricula for training in the poultry sub-sector and presents the basis for content development for the curricula in Poultry Production Operations Level 3. It will lead to a situation where the trainees will gain skills required in their occupation/jobs. The curriculum to be developed based on these OS will revolutionalize the Agriculture sector in Kenya.

# PREFACE

Poultry farming has been on the increase in the last ten years due to diminishing land size, high population density and the escalating un-employment levels in formal sector. It contributes to the lives of 21 million Kenyans and 6.1% of the agricultural GDP. There are approximately 32 million birds in Kenya out of which 76% are free ranging indigenous chicken, 8% are broilers and 14% commercial layers. The indigenous poultry production involves 75% of rural households. As of 2011, it was reported that approximately 71% of eggs and poultry meat in Kenya are derived from indigenous poultry. In 2006, it was reported that commercial poultry production constitutes 23.8% of the total poultry population, with broilers representing 16.2% and layers another 7.8%. Other poultry species such as ducks, guinea fowl, Quails and turkeys comprise about 2.2% of the total poultry population. The industry is therefore is supposed to play a strategic role in the ongoing socio economic pillar under the vision 2030.

However, the industry has seen slow growth over the past years due to lack of skills and increasing costs of production. This is despite the fact that the sub-sector contributes positively to wealth creation, poverty alleviation, and gender equity especially in the rural areas. The industry contributes to the macro economy by generating incomes for the value chain actors, creation of employment opportunities for rural people and provision of source of protein for poor families and manure for their gardens.

To address the challenge of lack of skilled labour, a Competency Based curriculum development process was initiated. Using the DACUM methodology Job or Occupational Analysis Chart and later these Occupation standards were developed in collaboration with the industry players and guided by Curriculum Development Assessment and Certification Council (CDACC). 11 Jobs/Occupations were identified. The information generated from the task analysis was also used to develop the Units of competences for each job. This was done by experts drawn from Technical training institutions, Universities and industry representatives. The result of the analysis was to the realization of Occupational Standards for 11 jobs along the poultry value chain.

The OS were presented to the Poultry Sector Skills Advisory Committee (PSSAC) who made recommendations for improvement and later submitted to the next stages of approval by the CDACC. The OS development process was a rigorous exercise that involved wide consultations with various stakeholders like expert workers with the aim of enriching it and promoting its acceptance. The end product is a rich and well thought tool that will be used to develop Broiler Production Operations Level 3 curriculum that shall deliver Competence Based Training and produce competent graduates that can employed, entrepreneurs or self-employed in the poultry industry.

**ACKNOWLEDGEMENT**

These occupational standards were developed through the combined efforts of different stakeholders in the poultry subsector namely private practitioners, Dairy Training Institute (DTI), Animal Health Training institutes (AHITI), regulators and key state departments. We wish to acknowledge the invaluable contribution received from the private sector industry players who provided inputs towards the development of these occupational standards against which this curriculum will be developed.

With the Occupational /Job Analysis charts in hand, the stakeholders provided technical inputs towards the development and completion of this OS. They sat through many hours putting together all the knowledge, skills and attitudes that a Poultry industry worker would require in effectively performing his/ her duties and tasks as per the occupational standards developed.

We are most sincerely thankful to the heads of these institutions who released their staff to join in this important course. Our gratitude goes to the various facilitators that moderated several workshops and ensured that all deliberations and outputs were captured and compiled. These persons did not only demonstrate patience, but also provided leadership by motivating and guiding the groups towards the finalization of this curriculum. We cannot forget to thank the government agencies that regulate the Technical and Vocational Education and Training (TVET) system namely TVET Authority and CDACC through whom guidance and support was provided on this curriculum development.

We are greatly indebted to the Food Security and Drought Resilience Programme (FSDRP) with support of the German Development Cooperation (GIZ), which enabled the implementation of this curriculum development process through the Food Security Project (FSP). In the same breath, we are indebted to the National Coordinator of the GIZ Comprehensive Africa Agricultural Development Programme (CAADP) ATVET project who was instrumental in enabling the smooth and close cooperation between the project and the key government ministries namely Ministry of Agriculture, Livestock, Fisheries and Irrigation (MoALF&I) and Ministry of Education (MoE).

Last but not least, we are grateful to any other person, institution, organization or company who played any role in making this process successful but has not been mentioned. We dearly acknowledge your contribution and support.

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# ABBREVIATIONS AND ACRONYMS

|  |  |
| --- | --- |
| 2D | 2 Dimensional |
| 3D | 3 Dimensional |
| AHITI | Animal Health and Industry Training Institute |
| 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 |
| DTI | Dairy Training Institute |
| 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 |
| TVET | Technical and Vocational Education and Training |
| TVETA | Technical and Vocational Education and Training Authority |

**KEY TO ISCED UNIT CODE**



# OVERVIEW

Poultry Broiler Production Level 3 qualification consists of competencies that an individual must have to produce broiler chicken. It involves constructing poultry structures and managing broiler chick brooding.

Core units of competency comprising Poultry Broiler Production Level 3 qualification include:

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| 0811 251 01A | Construct Poultry Structures  |
| 0811 251 02A | Manage Broiler Chick Brooding  |

# CONSTRUCT POULTRY STRUCTURES

**UNIT CODE:** **0811 251 01A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required to construct poultry structures. It involves preparing to construct poultry structures, constructing poultry house structure, installing poultry house structures and equipping poultry house.

|  |  |
| --- | --- |
| **ELEMENT**These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**These are assessable statements which specify the required level of performance for each of the elements.***Bold and italicized terms are elaborated in the range.*** |
| 1. Prepare to construct poultry structures
 | 1. Construction materials are assembled at construction site according to work place policy
2. Site of the poultry house is cleared based on guidelines in the Poultry Production Manual ***(PPM)***
3. Personal Protection Equipment and Apparel ***(PPE)***are gathered and donned based on work requirements
 |
| 1. Construct poultry house structures
 | 1. ***Poultry house*** layout is pegged according to design
2. Poultry house foundation is excavated based on house design, topography and soil type
3. Poultry house foundation is laid based on type of construction materials and design
4. ***Poultry house parts*** are constructed as per house design and type of construction materials procured.
 |
| 1. Install poultry house structures
 | 1. Fixed ***poultry house structures*** are constructed as per provided design and type of construction materials available
2. Movable poultry house structures are installed in the poultry house based on the design and pattern recommended in the PPM
 |
| 1. Equip poultry house
 | 1. ***Poultry house equipment*** installed or stored as per specifications in the poultry production manuals
 |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. PPM may include but not limited to
 | * National Poultry Development Programme Manual
* Production manuals by breeding and multiplication organizations like Issa Brown, Cobb, Kenchic and KALRO
 |
| 1. PPE may include but not limited to
 | * Overalls
* Gumboots
* Nose and mouth mask
 | * Goggles
* Gloves
* Head gear
 |
| 1. Poultry house may include but not limited to
 | * Standard open sided house
* Environmentally controlled house
* Slated floor house
 | * Battery cage house
* Deep litter house
 |
| 1. Poultry house parts may include but not limited to:
 | * Walls
* Floor
* Roof
 |  |
| 1. Poultry house structures may include but not limited to
 | * Perches
* Cages
* Pallets
 | * Electrical / water lines
* Slatted floors
* Brooder
 |
| 1. Poultry house equipment may include but not limited to
 | * Waterers
* Feeders
* Thermometer
 | * Heat source
* Hygrometer
 |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required skills**

The individual needs to demonstrate the following skills:

* Communication
* Carpentry
* Fabrication
* Negotiation
* Numeracy
* Observation
* Problem solving

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Measurements and conversions
* Carpentry
* Feeding and watering spacing allowances
* Geometry (symmetry)
* Handling and assessment construction materials
* House orientation
* Occupational health and safety procedures
* Types of poultry house equipment

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency
 | Assessment requires evidence that the candidate:* 1. Gathered and donned appropriate Personal Protective Equipment and (PPE) based on work requirements
	2. Constructed poultry house parts as per provided house design and type of construction materials assembled.
	3. Constructed poultry house structures as per provided design and type of construction materials available
	4. Installed poultry house structures timely as per the pattern recommended in the PPM
	5. Poultry house equipped with required poultry house equipment
 |
| 1. Resource Implications
 | The following resources **MUST** be provided:* 1. Assessment location / Upcoming broiler production farm
	2. Personal Protective Equipment and Apparel
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Observation
	2. Written tests
	3. Oral questioning
	4. Third party report
 |
| 1. Context of Assessment
 | Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment. |
| 1. Guidance information for assessment
 | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended.  |

# MANAGE BROILER CHICK BROODING

**UNIT CODE: 0811 251 02A**

**UNIT DESCRIPTION:**

This unit specifies the competencies required to manage broiler chick brooding. It involves preparing chick brooder, acquiring day-old chicks, feeding brooding chicks, managing brooder house micro climate, maintaining brooder hygiene and performing chick vaccination. It also entails controlling poultry vermin, controlling poultry predators and monitoring chick performance.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**These are assessable statements which specify the required level of performance for each of the elements.***Bold and italicized terms are elaborated in the range.*** |
| 1. Prepare chick brooder
 | 1. ***Brooder construction materials*** are assembled as per farm practices
2. Brooder is constructed as per poultry production manual (***PPM***) guidelines.
3. Equip chick brooder with ***chick brooder equipment*** as per poultry production guidelines
4. Cleaning and disinfection of the brooder based on Standard Operation Procedures (SOPs) of poultry production facilities
5. Brooder equipment are cleaned and sterilized as per the SOPs.
 |
| 1. Acquire day-old chicks
 | 1. Day-old chicks are transported as per PPM and animal welfare guidelines
2. Placement of day-old chicks is done as per poultry production guidelines in the PPM
 |
| 1. Feed brooding chicks
 | 1. Suitable feed type is identified and selected based on flock age
2. Feeding and watering equipment are ***prepared*** based on their condition, position and flock size
3. Adequate amount of chicks feed and water is determined and dispensed based on flock feeding requirements
 |
| 1. Manage brooder house micro climate
 | 1. ***Micro climate*** tools and equipment are identified as per environmental conditions and bird requirements.
2. Micro climate variations are assessed as per poultry production manual guidelines.
3. Brooder micro climate is moderated as per the requirements of the birds
 |
| 1. Maintain brooder hygiene
 | 1. Bio-safety measures are implemented as per guidelines in the poultry production manual and work place policies
2. Bio-safety conformity is monitored as per work place requirements
 |
| 1. Perform chick vaccination
 | 1. Chick vaccination schedule is followed as per farm practice
2. Vaccination equipment are selected as per farm practice
3. Chick vaccination records are kept as per organizational requirements
4. Vaccination procedures are dependent on type of vaccine
5. Post-vaccination behavior is monitored as per farm practices
 |
| 1. Control poultry vermin
 | 1. Vermin control measures are installed as per farm requirements
2. Vermin control is executed as per work place practices
 |
| 1. Control poultry predators
 | 1. Predator control measures are installed as per work place requirements
2. Predator control is executed as per work place practices
 |
| 1. Monitor chick performance
 | 1. ***Poultry vices*** are monitored as per work place practices
2. ***Performance assessment*** equipment and tools are selected based on work place practices
3. Performance assessment is carried out as per work place procedures
4. Chicks are culled as per work place procedures.
 |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Brooder construction materials may include but not limited to:
 | * Cardboard
* Wooden pegs
* Litter material
 |  |
| 1. PPM may include but not limited to:
 | * National Poultry Development Programme Manual
* Production manuals by breeding and multiplication organizations like;
* Issa Brown
* Cobb
* Kenchic
* KALRO
 |
| 1. Chick brooder equipment may include but not limited to:
 | * Brooder thermometer
* Charcoal jiko
* Infra-red bulb
* Gas burner
 | * Kerosene lamb
* Chick feeder
* Chick drinker
* Hygrometer
 |
| 1. Prepared may include but not limited to:
 | * Removing foreign material
* Removing spoilt left over feed
* Washing
* Drying
* Positioning in right pattern and height
 |
| 1. Micro climate may include but not to:
 | * Humidity
* Temperature
* Light
* Ventilation/ air flow
 |
| 1. Poultry vices may include but not limited to:
 | * Pecking
* Cannibalism
 |
| 1. Poultry Performance assessment may include but not limited to:
 | * Weighing
* Physical appearance
* Gait
* Behavior
 |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required skills**

The individual needs to demonstrate the following skills:

* Carpentry
* Communication
* Handling
* Numeracy
* Observation
* Poultry Handling
* Vaccination skills

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Algebra
* Bio-safety
* Carpentry
* Poultry behavior
* Poultry health
* Poultry management
* Predator control
* Scales and measurement

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency
 | Assessment requires evidence that the candidate:* 1. Set-up chick brooder accurately
	2. Maintained the right chick stocking density
	3. Moderated brooder micro- climate appropriately
	4. Provided adequate amounts of chick feeds timely
	5. Observed bio- safety measures
	6. Followed vaccination schedule as planned
	7. Put in place control measures for vermins and predators.
 |
| 1. Resource Implications
 | The following resources **MUST** be provided:* 1. Assessment location / broiler production farm
	2. Personal Protective Equipment and Apparel
 |
| 1. Methods of Assessment
 | Competency may be assessed through:* 1. Observation
	2. Written tests
	3. Oral questioning
 |
| 1. Context of Assessment
 | Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment. |
| 1. Guidance information for assessment
 | Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended.  |