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**REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARD**

**FOR**

**POULTRY HATCHERY OPERATOR**

**KNQF 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-economic development. Quality education and training will contribute to the achievement of Kenya’s development blueprint, Vision 2030 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. These reforms resulted to the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No.14 of 2012). A key feature of this policy is the radical change in the design and delivery of the TVET training. This policy document requires that training in TVET be competency based, certification be based on demonstration of competence and mode of delivery allows for multiple entry and exit in TVET programs.

The reforms also demand that industry informs curriculum development to ensure the curriculum addresses its competence needs. It is against this background that this Occupational Standard were developed for developing a Competency-Based Education and Training (CBET) curriculum for poultry hatchery operator Level 4. The Standard will also be the basis for the assessment of an individual for competency certification.

It is my conviction that this Occupational Standard will play a great role in the development of a competent human resource for sustainable development.

# 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).

TVET Act CAP 201A and Sessional Paper No. 14 of 2012 on Reforming Education and Training in Kenya, 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 the industry as well as increase the global competitiveness of the Kenyan labor force. Experienced trainers in conjunction with industry experts developed this curriculum.

# ACKNOWLEDGMENT

This Occupational Standard were developed through the combined effort of various stakeholders from private and public organizations. I am thankful to the management of these organizations for allowing their staff to participate in this course. I wish to acknowledge the invaluable contribution of industry players who provided input towards the development of this Occupational Standard.

I also thank all the individuals and organizations who participated in the validation of this occupational standard.

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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 UNIT CODE

Sector / Industry

Sub Sector

Curriculum Area

Version Control

Unit of Competence Number

ISCED level, Programme Orientation and Level of Completion

xx

x

xxx

x

x

x

# OVERVIEW

Poultry Hatchery Operations Level 4 qualification consists of units of learning that a person must achieve to hatch poultry. It involves handling of eggs for hatching, hatching poultry eggs and handling hatched chicks.

The units of competency comprising Poultry Hatchery Operations Level 4 qualification include the following core units:

**CORE** **UNITS OF COMPETENCY**

|  |  |
| --- | --- |
| **ISCED Unit Code** | **Unit Title** |
| 0811 351 01A | Handle Eggs for Hatching |
| 0811 351 02A | Hatch Poultry Eggs |
| 0811 351 03A | Handle Hatched Chicks |

# HANDLE EGGS FOR HATCHING

**ISCED UNIT CODE:** 0811 351 01A

**UNIT DESCRIPTION:**

This unit specifies the competencies required to handle eggs for hatching. It involves grading of eggs for hatching, storage of fumigated eggs and entry of hatchery records.

**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. Grade eggs for hatching | 1. ***Personal Protection Equipment and Apparel (PPEs)*** are identified and donned in accordance with ***poultry production manual (PPM)*** and work place procedures 2. Hatching eggs are offloaded into the sorting room according to PPM and ***hatching egg handling guidelines*** 3. Hatching eggs are sorted into storage trays in accordance with the PPM and hatching egg handling guidelines 4. Rejected eggs are disposed in accordance with the *e****nvironmental protection regulations*** and work place procedures |
| 1. Store fumigated eggs | 1. Hatchery biosecurity measures are observed and adhered to according to PPM guidelines and work place procedures 2. Sorted and accepted eggs are fumigated in the fumigation chamber in accordance with the PPM and hatching egg handling guidelines 3. Fumigated eggs are stored at a temperature of between 12oC and 18oC awaiting setting in accordance with the PPM and hatching egg handling guidelines |
| 1. Enter hatchery records | 1. Number of eggs received, source, type and date received are entered into the hatchery inventory record in accordance with work place procedures 2. Number of eggs broken on reception, rejected, accepted / stored are entered into the hatchery inventory record in accordance with 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. Poultry production manual (PPM) may include but limited to: | * National Poultry Development Programme Manual * Breeder’s manuals by breeders like Cobb and Issa Brown |
| 1. Personal Protection Equipment and Apparel (PPE) may include but limited to: | * Overalls * Gumboots * Nose and mouth mask * Goggles * Gloves * Head gear |
| 1. Hatching egg handling guidelines may include but limited to: | * Hand sanitization or wearing gloves whenever handling eggs * Free from communicable diseases * Handling eggs with care * Avoiding wetting the eggs |
| 1. Environmental protection regulations may include but limited to: | * Public Health Act * EMCA 1999 * OSH Act 2007 |

**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
* Egg handling
* Egg sorting
* Numeracy
* Observation
* Record keeping
* Weighing

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Egg sizes and shape
* Egg handling
* Egg sorting
* Egg storage
* Record keeping
* Refrigeration methods
* Types of hatchery records
* Personal hygiene

**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. Handled hatching eggs with care in accordance with hatching egg handling regulations   2. Sorted hatching eggs in accordance with the PPM and hatching egg handling guidelines   3. Stored hatching eggs in accordance with the PPM and hatching egg handling guidelines   4. Entered egg records accurately in accordance with work place procedures   5. Observed occupational safety and health measures in the working environment   6. Observed laid down environmental protection measures at the work place |
| 1. Resource Implications | The following resources must be provided:   * 1. Assessment location / workplace   2. Personal Protective Equipment and Apparel   3. Assessment materials |
| 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 during industrial attachment. 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. |

# HATCH POULTRY EGGS

**ISCED UNIT CODE:** 0811 351 02 A

**UNIT DESCRIPTION:**

This unit specifies the competencies required to hatch poultry eggs. It involves setting poultry eggs, monitoring egg hatching, transfer of hatched chicks and entry of hatchery records.

**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. Set poultry eggs | 1. ***Personal Protection Equipment and Apparel (PPEs)*** are identified and donned in accordance with ***poultry production manual (PPM)*** and work place procedures 2. Hatchery biosecurity measures are observed and adhered to according to PPM guidelines and work place procedures 3. Hatching eggs are retrieved from cold store into the egg traying room using recommended ***hatching egg handling regulations*** 4. ***Incubation chamber parameters*** are set according to incubator manufacturers guidelines, PPM regulations and hatchery SOPs 5. Hatching eggs are transferred into setting trays with broad ends facing up following recommended hatching egg handling regulations 6. Setting trays with hatching eggs are loaded onto setting trolleys following recommended hatching egg handling regulations 7. Loaded setting trolleys or trays are driven / pushed into incubation chamber and locked in for incubation. |
| 1. Monitor egg hatching | 1. Eggs are removed from the incubation chamber on the 18th day post setting as per hatching egg handling regulations 2. Eggs are candled to remove non-fertile ones and those with dead embryos in accordance with procedures in the PPM 3. Fertile eggs with developing embryos are transferred into hatching baskets in accordance with procedures in the PPM 4. Loaded hatching baskets are transferred into hatching chamber/machine according to procedures in the PPM 5. Hatching process is monitored from the 20th day onwards for about 33 hours in accordance with procedures in the PPM |
| 1. Transfer hatched chicks | 1. Hatching baskets with chicks, un-hatched eggs and hatching debris are pulled from the hatching chamber/machine on the 21st day according to procedures in the PPM 2. Hatched, dry and healthy chicks are removed from the hatching baskets and transferred to chick cartons/crates as per procedures in the PPM 3. Hatchery wastes are disposed according to *e****nvironmental protection regulations*** and work place procedures |
| 1. Enter hatchery records | 1. Number of eggs set and candled are entered into the hatchery inventory records in accordance with work place procedures 2. Number of fertile and rejected eggs are entered into the hatchery inventory record in accordance with work place procedures 3. Dates of setting, candling and transfer to hatching chamber are recorded in accordance with work place policy |

**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. PPEs may include but not limited to: | * Overalls * Gumboots * Nose and mouth mask * Goggles * Gloves * Head gear |
| 1. Poultry production manuals (PPM)   may include but not limited to: | * National Poultry Development Programme Manual * Breeder’s manuals by breeders like Cobb and Issa Brown |
| 1. Hatching egg handling guidelines may include but not limited to: | * Hand sanitization or wearing gloves whenever handling eggs * Free from communicable diseases * Handling eggs with care * Avoiding wetting the eggs |
| 1. Incubation chamber parameters may include but not limited to: | * Temperature * Humidity * Air quality and flow * Egg inclination |
| 1. Environmental protection regulations may include but not limited to: | * Public Health Act * EMCA 1999 * OSH Act 2007 |

**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:

* Chick handling
* Cleaning
* Communication
* Egg handling
* Observation
* Operation of incubation and hatching machines
* Record keeping

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Chick development
* Chick environmental physiology
* Chick weighing
* Chick welfare
* Cleaning, sanitization and disinfection procedures
* Egg candling techniques
* Egg handling
* Egg incubation technology
* Egg turning
* Hatchery air conditioning
* Hatchery biosecurity measures
* Hatchery record keeping
* Hatching egg sorting
* Hatching process
* Heat transfer
* Incubator environment
* Waste disposal maceration and rendering techniques
* Occupational safety and health
* Personal hygiene and public health
* Types of cleaning agents, sanitizers and disinfectants
* Types of hatchery records

**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. Implemented hatchery biosecurity measures according to standard operating procedures (SOP)   2. Handled eggs according to hatching egg handling regulations   3. Set and monitored the correct incubator parameters according to the PPM and manufacturer’s guidelines   4. Handled chicks safely in accordance with PPM guidelines   5. Disposed hatchery waste following recommended environmental protection regulations   6. Entered recommended hatchery records accurately according to work place procedures |
| 1. Resource Implications | The following resources **MUST** be provided:   * 1. Assessment location / workplace   2. Personal Protective Equipment and Apparel   3. Assessment materials |
| 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 during industrial attachment. 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. |

# HANDLE HATCHED CHICKS

**ISCED UNIT CODE:** 0811 351 03A

**UNIT DESCRIPTION:**

This unit specifies the competencies required to handle hatched chicks. It involves performing chick sexing, trimming chick beaks, monitoring chick health, packaging poultry chicks and managing unwanted chicks. It also entails managing hatchery biosecurity measures, maintaining hatchery records, operating computer devices, solving tasks using computer devices, applying communication Skills and promoting ethical work practices and values.

**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. Perform chick sexing | 1. Hatched ***chicks are*** ***assessed*** to distinguish males from females in accordance with organizational preferences and market demands 2. Males are separated from females in accordance with work place procedures |
| 1. Trim chick beaks | 1. Beak trimming equipment is identified as per ***Poultry Production Manual (PPM)*** 2. Chick beaks trimmed as per hatchery practice |
| 1. Monitor chick health | 1. Vaccination ***preparations*** are done in accordance with Poultry Production Manual (PPM) and vaccine manufacturer’s guidelines 2. Chick vaccines are administered in accordance with the developed schedule 3. Vaccinated chicks are observed to ascertain vaccine intake and check for abnormal reactions in accordance with PPM and vaccine manufacturer’s guidelines 4. Chicks are observed for signs of disease, deformities or abnormal behavior in accordance with the PPM 5. Unhealthy chicks are isolated as per the PPM 6. A veterinarian is consulted immediately for advice as per the PPM requirements |
| 1. Package poultry chicks | 1. Labeled chick packaging cartons or crates are identified and gathered in accordance with animal welfare regulations, PPM guidelines and work place procedures 2. Poultry chicks are transferred into packaging crates or cartons in accordance with animal welfare regulations, PPM guidelines and work place procedures 3. Crates and cartons with chicks are sealed in readiness transportation in accordance with animal welfare regulations, PPM guidelines and work place procedures 4. Chicks are transported in accordance with animal welfare standards |
| 1. Manage unwanted chicks | 1. ***Unwanted chicks*** are identified and separated for disposal according to market demand and designed biosecurity measures 2. Unwanted chicks are packaged and dispatched to interested clients based on placed orders and work place procedures |
| 1. Manage hatchery biosecurity measures | 1. Biosecurity structures and equipment are ***operationalized*** in accordance with the PPM 2. Standard operational procedures are posted at strategic points in the hatchery unit according to GMP 3. Human and traffic movement into the hatchery unit is ***restricted and monitored*** according to GMP and work place policy 4. Sanitization and ***PPEs*** facilities are provided for hatchery unit personnel according to GMP and work place policy 5. Personal Protection Equipment and Apparel are identified, gathered and donned based on job requirements 6. Occupational safety and health procedures are adhered to according to work place procedures 7. Environmental protection measures are observed according to ***environmental protection regulations*** and work place procedures 8. Hatchery buildings and equipment are cleaned, disinfected and fumigated according to GMP regulations and work place policy 9. ***Hatchery waste*** is disposed into waste pits after passing through maceration tanks or rendering units according to work place policy, GMP and environment protection regulations |
| 1. Maintain hatchery records | 1. Number of male/female chicks are entered in accordance with wok place procedures 2. Chick vaccination details are recorded as per PPM guidelines and farm policies 3. Chick health records are entered in accordance with work place procedures 4. Details of packaged chicks are entered in accordance with work place procedures 5. Records per every hatch are made as per firm practice |

**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. Chicks are assessed may include but not limited to: | Determination of sex of chick through;   * Color observation * Vent observation * Feather length observation * DNA sequence |
| 1. Poultry Production Manual ***(PPM)*** may include but not limited to: | * National Poultry Development Programme Manual * Breeder’s manuals by breeders like Cobb and Issa Brown |
| 1. Preparations may include but not limited to: | Activities that are carried out before, during and after vaccination;   * Provision of anti-stress nutritional premixes * Feed and water withdrawal * Confirmation of bird numbers to determine dosage * Provision of disinfectant free water * Positioning vaccine receptacles in the poultry house for oral vaccines * Confine and restrain poultry for injectable and ocular-nasal vaccines |
| 1. Unwanted chicks may include but not limited to: | * Culled chicks * Unhealthy chicks * Deformed chicks * Males in commercial layers |
| 1. Vaccination details may include but not limited to: | * Type of vaccine * Type of disease vaccinated against * Age of poultry * Date and time of vaccination * Date of manufacture and expiry of vaccine * Vaccine source and batch number * Route of vaccine administration (IM, wing stab, sub cutaneous, intra nasal, intra ocular or spray) * Number of birds vaccinated * Identification of birds (flock, type, breed) |
| 1. Operationalized may include but not limited to: | * Placing disinfectants in foot baths and spray jet tanks * Placing fumigants in fumigation chamber tanks * Pumping disinfection spray jets |
| 1. Restricted and monitored may include but not limited to: | * Placing screening barriers at sentry gates * Implementing visitor identification systems e.g. badges * Having visitors to fill a questionnaire indicating previous visits to other poultry farms in the past one week * Barring vehicles and unauthorized persons from accessing poultry houses and surrounding vicinities |
| 1. PPE may include but not limited to: | * Overalls * Gumboots * Nose and mouth mask * Goggles * Gloves * Head gear |
| 1. Environment protection regulations may include but not limited to: | Guidelines designed and enforced by:   * National Environmental Management Authority * Ministry of Health |
| 1. Hatchery waste may include but not limited to: | * Fluff * Contaminated eggs * Hatched egg shell debris * Pipped chicks (dead in shell) * Unhatched eggs * Dead chicks * Meconium droppings |

**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:

* + Chick handling
  + Cleaning
  + Colour sexing
  + Communication
  + Feather length sexing
  + Observation
  + Record keeping
  + Vaccination
  + Vent sexing

**Required knowledge**

The individual needs to demonstrate knowledge of:

* + Chick environmental physiology
  + Chick packaging
  + Chick vaccination at the hatchery
  + Chick vaccination methods and routes
  + Chick welfare
  + Cleaning, sanitization and disinfection procedures
  + Early chick feeding
  + Hatchery air conditioning
  + Hatchery biosecurity measures
  + Hatchery record keeping
  + Heat transfer
  + Humane killing
  + Waste disposal maceration and rendering techniques
  + Methods of chick sexing
  + Mode of disease and parasite spread
  + Occupational safety and health
  + Personal hygiene and public health
  + Types of cleaning agents, sanitizers and disinfectants
  + Types of early chick vaccines
  + Types of hatchery records
  + Vaccination and vaccine records
  + Vaccine care and handling
  + Vaccine reaction sites

**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. Implemented hatchery biosecurity measures according to standard operating procedures (SOP) 2. Identified sex of chicks using appropriate method of sexing 3. Implemented chick vaccination programme 4. Handled chicks safely in accordance with PPM guidelines 5. Disposed hatchery waste following recommended environmental protection regulations 6. Kept recommended hatchery records according to work place procedures |
| 1. Resource Implications | The following resources must be provided:   * 1. Assessment location / workplace   2. Personal Protective Equipment and Apparel   3. Assessment materials |
| 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 during industrial attachment. 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. |