



THE REPUBLIC OF KENYA

Ministry of Agriculture, Livestock, Fisheries and Irrigation

COMPETENCY BASED CURRICULUM

FOR

POULTRY HATCHERY OPERATOR

KNQF - LEVEL 4



TVET CDACC
P.O. BOX 15745-00100
NAIROBI

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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 with agriculture sector being the leading sector contributing 27.3% to the Gross Domestic Product (GDP) in 2014. In this regard, crops, animal production, fishing and aquaculture contributed 19.7%, 4.9% and 0.8% of the GDP respectively totalling 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 current education system emphasizes 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 agriculture training curriculum, its delivery and 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.

This curriculum for the poultry subsector presents us with a unique approach to training which will allow the trainees to gain skills required in their occupation/jobs. It will also allow them to train on their areas of interest without necessarily undertaking all the modules in the curriculum; this permits flexibility in training with multiple entries and exits. It is therefore the curriculum that will revolutionize the Agriculture sector in Kenya.

Dr. Harry Kimtai,

Principal Secretary,

State Department of Livestock,

Ministry of Agriculture, Livestock and Fisheries.

PREFACE

Poultry farming has been on the increase in the last ten years due to high population density, diminishing land sizes, and the escalating un-employment levels in formal sector. Poultry farming contributes to the lives of 21 million Kenyans and 6.1% of 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 fowls, Quails and turkeys comprise about 2.2% of the total poultry population. The industry is therefore 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 Analysis Chart and Occupation standards were developed in collaboration with the industry players and guided by Curriculum Development Assessment and Certification Council (CDACC). Eleven Jobs/Occupations were identified,

Job Analysis Charts were further analyzed through Task Analysis and the information generated used to develop Occupation Standards. The information generated from the task analysis was also used to develop the Units of competences for each job. The result was to the realization of 11 curricula for the poultry subsector. This was done by experts drawn from Technical training institutions, Universities and industry representatives.

The curricula were presented to the Poultry Sector Skills Advisory Committee (PSSAC) who made recommendations for improvement of the curricula and adopted the curricula for its progression to the next stages of approval by the CDACC. The curricula development process was a rigorous exercise that involved wide consultations with various stakeholders 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 deliver Competence Based Training and produce competent graduates that can employed, entrepreneurs or self-employed in the poultry industry.

Prof Charles M. M. Ondieki, PhD, FIET (K), Con. Eng Tech.

Chairman , TVET CDACC.

ACKNOWLEDGEMENTS

This Curriculum was developed through the combined efforts of different stakeholders in the poultry subsector namely the state department of livestock, private practitioners and regulators. Institutions in the State Departments of Livestock led the process of this curriculum development and key among them were the Dairy Training Institute (DTI), and, Animal Health and Industry Training Institutes (AHITIs). We wish to acknowledge the invaluable contribution received from the private sector industry players who provided inputs towards the development of occupational standards against which this curriculum was developed.

With the Occupational Standards in hand, the stakeholders provided technical inputs towards the development and completion of this curriculum. 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 indebted to the NEPAD Planning and Coordinating Agency (NPCA) of the Africa Union Commission (AUC) with support of the German Development Cooperation (GIZ), which enabled the implementation of this curriculum development process through the CAADP ATVET project. The National Coordinator of the GIZ CAADP ATVET Project 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.

Dr. Lawrence Guantai M'Itonga, PhD,

Council Secretary/CEO,

TVET

CDACC.

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
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

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COURSE OVERVIEW

Description of the course

This course is designed to equip individuals with competencies for operating poultry hatchery. It entails handling eggs for hatching, hatching poultry eggs and handling hatched chicks

This course consists of basic and core units of learning as indicated below:

Basic Units of Learning

Unit Code	Unit Title	Duration in Hours
	Communication Skills	16
	Numeracy Skills	32
	Digital Literacy	48
	Entrepreneurial Skills	16
	Employability Skills	16
	Environmental Literacy	16
	Occupational Safety and Health Practices	16
Total		

Core Units of Learning

Unit Code	Unit Title	Duration in Hours
	Handle eggs for hatching	112
	Hatch poultry eggs	96
	Handle hatched chicks	112
Total		

The core units of learning are independent of each other and may be taken independently.

The total duration of the course is 640 hours: 480 hours (1 semester of 16 weeks at 30 hours per week) plus 160 hours (4 weeks by 5 days per week by 8 hours per day) of field attachment.

Field Attachment

It is envisaged that the trainee will have undergone a field training and assessment with a recognized poultry hatchery farm as a prerequisite for completion of this training course. At least 160 hours (4 weeks) will be spent on a supervised and assessed field attachment.

Entry Requirements

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

- a) Broiler Production Operator, Artisan Certificate Level 3

Or

b) Layer Production Operator, Artisan Certificate Level 3

Or

c) *Kienyeji* Chicken Production Operator, Artisan Certificate Level 3

Or

d) Attained KCSE certificate

Or

e) Equivalent qualifications as determined by Kenya National Qualifications Framework (KNQF)

Assessment

The course will be assessed at two levels: internally and externally. Internal assessment is continuous and is conducted by the trainer who is monitored by an accredited internal verifier while external assessment is conducted by accredited external assessors appointed by TVET CDACC.

Certification

A candidate will be issued with a Record of Achievement on demonstration of competence in a unit of competency. To attain the qualification Poultry Hatchery Operator, Artisan Certificate Level 4, the candidate must demonstrate competence in all the units of competency as given in qualification pack. These certificates will be issued by TVET CDACC in conjunction with training provider.

BASIC UNITS OF LEARNING

COMMUNICATION SKILLS

UNIT CODE:

Relationship to Occupational Standards

This unit addresses the unit of competency: Demonstrate communication skills

Duration of Unit: 16 hours

Unit Description

This unit covers the competencies required in meeting communication needs of clients and colleagues and establishing and maintaining communication pathways at workplace.

Summary of Learning Outcomes

1. Utilize specialized communication skills processes
2. Establish and maintain communication pathways
3. Promote use of communication strategies

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Utilize specialized communication skills	<ul style="list-style-type: none">• Communication process• Modes of communication• Medium of communication• Effective communication• Barriers to communication• Flow of communication• Sources of information• Organizational policies• Organization requirements for written and electronic communication• Report writing• Effective questioning techniques (clarifying and probing)• Workplace etiquette• Ethical work practices in handling communication• Active listening	<ul style="list-style-type: none">• Written• Oral

	<ul style="list-style-type: none"> • Feedback • Interpretation • Facilitating resolution of conflict 	
2. Promote use of communication strategies	<ul style="list-style-type: none"> • Application of elements of communication strategies • Effective communication techniques 	<ul style="list-style-type: none"> • Written • Observation
3. Establish and maintain communication pathways	<ul style="list-style-type: none"> • Types of communication pathways 	<ul style="list-style-type: none"> • Written • Observation

Suggested Delivery Methods

- Trainer instruction
- Trainee practice
- Role playing
- Observation

Recommended Resources

- Desktop computers/laptops
- Internet connection
- Projectors
- Telephone
- Stationery

NUMERACY SKILLS

UNIT CODE:

Relationship to Occupational Standards

This unit addresses the unit of competency: Demonstrate numeracy skills

Duration of Unit: 32 hours

Unit Description

This unit describes the competencies required by a worker in order to apply a wide range of mathematical calculations for work; apply ratios, rates and proportions to solve problems; estimate, measure and calculate measurement for work; Collect and organize statistical data; Use routine formula and algebraic expressions for work and use common functions of a scientific calculator

Summary of Learning Outcomes

1. Apply a wide range of mathematical calculations for work
2. Apply ratios, rates and proportions to solve problems
3. Estimate, measure and calculate measurement for work
4. Collect and organize statistical data
5. Use routine formula and algebraic expressions for work
6. Use common functions of a scientific calculator

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Apply a wide range of mathematical calculations for work	<ul style="list-style-type: none">• Fundamentals of mathematics<ul style="list-style-type: none">○ Addition, subtraction, multiplication and division of positive and negative numbers○ Algebraic expressions manipulation• Forms of fractions, decimals and percentages• Expression of numbers as powers and roots	<ul style="list-style-type: none">• Written tests• Assignments• Supervised exercises
2. Apply ratios, rates and proportions to solve problems	<ul style="list-style-type: none">• Rates, ratios and proportions• Meaning• Conversions into percentages• Direct and inverse proportions determination• Performing calculations	<ul style="list-style-type: none">• Written tests• Oral questioning• Assignments• Supervised exercises

	<ul style="list-style-type: none"> • Construction of graphs, charts and tables • Recording of information 	
3. Estimate, measure and calculate measurement for work	<ul style="list-style-type: none"> • Units of measurements and their symbols • Identification and selection of measuring equipment • Conversion of units of measurement • Perimeters of regular figures • Areas of regular figures • Volumes of regular figures • Carrying out measurements • Recording of information 	<ul style="list-style-type: none"> • Assignments • Supervised exercises • Written tests
4. Collect and organize statistical data	<ul style="list-style-type: none"> • Classification of data <ul style="list-style-type: none"> ○ Grouped data ○ Ungrouped data • Data collection <ul style="list-style-type: none"> ○ Observation ○ Recording • Distinguishing between sampling and census • Importance of sampling • Types of sampling and their limitations e.g. <ul style="list-style-type: none"> ○ Stratified random ○ Cluster ○ Judgmental • Tabulation of data <ul style="list-style-type: none"> ○ Class intervals ○ Class boundaries ○ Frequency tables ○ Cumulative frequency • Diagrammatic and graphical presentation of data e.g. <ul style="list-style-type: none"> ○ Histograms ○ Frequency polygons ○ Bar charts ○ Pie charts ○ Cumulative frequency curves 	<ul style="list-style-type: none"> • Assignments • Supervised exercises • Written tests
5. Use routine formula and algebraic	<ul style="list-style-type: none"> • Solving linear equations • Linear graphs <ul style="list-style-type: none"> ○ Plotting 	<ul style="list-style-type: none"> • Assignments • Supervised exercises

expressions for work	<ul style="list-style-type: none"> ○ Interpretation ● Applications of linear graphs 	<ul style="list-style-type: none"> ● Written tests
6. Use common functions of a scientific calculator	<ul style="list-style-type: none"> ● Identify and use keys for common functions on a calculator ● Calculate using whole numbers, money and routine decimals and percentages ● Calculate with routine fractions and percentages ● Apply order of operations to solve multi-step calculations ● Interpret display and record result 	<ul style="list-style-type: none"> ● Oral ● Written ● Practical test ● Observation

Suggested Delivery Methods

- Group discussions
- Trainer instruction
- Demonstration by trainer
- Practical work by trainee
- Exercises

Recommended Resources

- Calculators
- Rulers, pencils, erasers
- Charts with presentations of data
- Graph books
- Dice
- Internet
- Computer/laptop
- LCD

DIGITAL LITERACY

UNIT CODE:

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Demonstrate digital literacy

Duration of Unit: 48 hours

Unit Description

This unit describes competencies required to use a computer and other digital devices for the purposes of communication, work performance and management at the workplace.

Summary of Learning Outcomes

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

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Identify computer hardware and software	<ul style="list-style-type: none">• Concepts of ICT• Functions of ICT• History of computers• Components of a computer• Classification of computers	<ul style="list-style-type: none">• Written tests• Oral presentation• Observation
2. Apply security measures to data, hardware and software	<ul style="list-style-type: none">• Data security and control• Security threats and control measures• Types of computer crimes• Detection and protection against computer crimes• Laws governing protection of ICT	<ul style="list-style-type: none">• Written tests• Oral presentation• Observation• Project
3. Apply computer software in solving tasks	<ul style="list-style-type: none">• Operating system• Word processing• Spread sheets• Data manipulation, storage and retrieval	<ul style="list-style-type: none">• Oral questioning• Observation• Project

Learning Outcome	Content	Suggested Assessment Methods
4. Apply internet and email in communication at workplace	<ul style="list-style-type: none"> • Computer networks • Network configurations • Uses of internet • Electronic mail (e-mail) concept 	<ul style="list-style-type: none"> • Oral questioning • Observation • Oral presentation • Written report

Suggested Delivery Methods

- Instructor led facilitation of theory
- Demonstration by trainer
- Practical work by trainee
- Viewing of related videos
- Project
- Group discussions

Recommended Resources

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

ENTREPRENEURIAL SKILLS

UNIT CODE:

Relationship to occupational standards

This unit addresses the unit of competency: Demonstrate entrepreneurial skills

Duration of unit: 16 hours

Unit description

This unit describes the competencies critical to demonstration of entrepreneurial aptitudes. It involves, developing business innovation strategies, developing new markets, customer base, expanding employed capital and undertaking regional/county expansion.

Summary of Learning Outcomes

1. Develop business innovation strategies
2. Develop new products/ markets
3. Expand customers and product lines
4. Expand employed capital base
5. Undertake regional/county business expansion

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Methods	Assessment
1. Develop business Innovation strategies	<ul style="list-style-type: none">• Innovation in business• Business innovation strategies• Creativity for business development• Linkages with other entrepreneurs• New ideas and approaches• Entrepreneurial skills development• Market trends• Monitoring and anticipating market trends• Products and processes in entrepreneurship• Business conventions and exhibitions	<ul style="list-style-type: none">• Observation• Case studies• Individual/group assignments• projects• Written• Oral	

	<ul style="list-style-type: none"> • Business growth refocus 	
2. Develop new products/ markets	<ul style="list-style-type: none"> • Identifying new sources of raw material and resources • New target markets/customers • Increasing products and services • Marketing improvement 	<ul style="list-style-type: none"> • Observation • Case studies • Individual/group assignments • projects • Written • Oral
3. Expand customers and product lines	<ul style="list-style-type: none"> • Market demand • Regulatory environment • Creating product and services competitive advantages • Creating royal client base • Identifying and maintain new customers and markets • Advance product/ service promotions • Advance market expansion • Small business records management • Book keeping and auditing for small businesses • Computer application software and programmes • ICT in customer and product diversification 	<ul style="list-style-type: none"> • Oral • Observation • Case studies • Individual/group assignments • projects • Written
4. Expand employed capital base	<ul style="list-style-type: none"> • Employed capital in business • Business share holdings • Types of shares • Shares diversification • Role of shareholders • Entrepreneurship • Increasing products and services 	<ul style="list-style-type: none"> • Observation • Case studies • Individual/group assignments • projects • Written • Oral
5. Undertake county/ regional business expansion	<ul style="list-style-type: none"> • Region/ county identification process • Regional/ county laws and 	<ul style="list-style-type: none"> • Observation • Case studies • Individual/group

	<p>regulation</p> <ul style="list-style-type: none"> • Business regional/county expansion • Regional/ County business expansion • Innovation in business • Business expansion and diversification • Resources for regional/county expansion 	<p>assignments</p> <ul style="list-style-type: none"> • projects • Written • Oral
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Suggested Delivery Methods

- Instructor led facilitation of theory
- Demonstration by trainer
- Practice by trainee
- Role play
- Case study
- Audio-visual digital presentation

Recommended Resources

- Case studies for small businesses
- Business plan templates
- Strategic plans
- Laptop/ desktop computers
- Calculators
- Internet
- Telephone
- Writing materials – pens, books

EMPLOYABILITY SKILLS

UNIT CODE:

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Demonstrate employability skills

Duration of Unit: 16 hours

Unit Description

This unit covers competencies required to demonstrate employability skills. It involves competencies for exuding self-awareness and ability to deal with everyday life challenges; demonstrating critical safe work habits and being team player; applying learning, creativity and innovativeness in workplace functions; pursuing professional growth and managing time effectively in the workplace.

Summary of Learning Outcomes

1. Develop self-awareness and ability to deal with life challenges
2. Demonstrate critical safe work habits
3. Demonstrate team work the workplace
4. Maintain professional growth and development in the workplace.
5. Demonstrate learning, creativity and innovativeness in the workplace.

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Develop self-awareness and ability to deal with life challenges	<ul style="list-style-type: none">• Self-awareness• Formulating personal vision, mission and goals• Strategies for overcoming life challenges• Managing emotions• Emotional intelligence• Assertiveness versus aggressiveness• Expressing personal thoughts, feelings and beliefs• Self esteem• Developing and maintaining high self-esteem	<ul style="list-style-type: none">• Observation• Written• Oral interview• Third party report

	<ul style="list-style-type: none"> • Developing and maintaining positive self-image • Sharing personal feelings • Setting performance targets • Monitoring and evaluating performance • Articulating ideas and aspirations • Accountability and responsibility 	
2. Demonstrate critical safe work habits	<ul style="list-style-type: none"> • Stress and stress management • Time concept • Punctuality and time consciousness • Leisure • Integrating personal objectives into organizational objectives • Resources utilization • Setting work priorities • Developing healthy relationships • HIV and AIDS • Drug and substance abuse • Dealing with emerging issues 	<ul style="list-style-type: none"> • Observation • Written • Oral interview • Third party report
3. Demonstrate team work the workplace	<ul style="list-style-type: none"> • Team building • Determination of team roles and objectives • Team parameters and relationships • Individual responsibilities in a team • Forms of communication • Business communication • Complementing team activities • Gender and gender mainstreaming • Human rights protocols • Developing healthy relationships • Maintaining relationships • Conflicts and conflict resolution 	<ul style="list-style-type: none"> • Observation • Oral interview • Written • Third party report
4. Maintain professional growth and development in the workplace	<ul style="list-style-type: none"> • Avenues for professional growth • Training and career opportunities • Assessing training needs • Licenses and certifications for professional growth and 	<ul style="list-style-type: none"> • Observation • Oral interview • Written • Third party report

	development <ul style="list-style-type: none"> • Pursuing personal and organizational goals • Managing work priorities and commitments • Recognizing career advancement 	
5. Demonstrate learning, creativity and innovativeness in the workplace	<ul style="list-style-type: none"> • Managing own learning • Networking • Variety of learning context • Application of learning • Safe use of technology • Taking initiative/pro-activity • Flexibility • Identifying opportunities • Generating new ideas • Workplace innovation • Performance improvement 	<ul style="list-style-type: none"> • Observation • Oral interview • Written • Third party report

Suggested Methods of Delivery

- Instructor lead facilitation of theory
- Demonstrations
- Simulation/Role play
- Group Discussion
- Presentations
- Projects
- Case studies
- Audio-visual digital presentation
- Assignments

Recommended Resources

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

ENVIRONMENTAL LITERACY

UNIT CODE:

Relationship to Occupational Standards:

This unit addresses the unit standard: **Demonstrate environmental literacy**

Duration of Unit: 16 hours

Unit Description

This unit describes the competencies required to control environmental hazards, control environmental pollution, comply with workplace sustainable resource use, identify environmental legislations/conventions for environmental concerns, implement specific environmental programs, and monitor activities on environmental protection/programs.

Summary of Learning Outcomes

1. Control environmental hazard
2. Control environmental pollution
3. Demonstrate sustainable resource use
4. Implement specific environmental programs

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Control environmental hazard	<ul style="list-style-type: none">• Purposes and content of Environmental Management and Coordination Act 1999• Storage methods for environmentally hazardous materials• Disposal methods of hazardous wastes• Types and uses of PPE in line with environmental regulations• Occupational Safety and Health Standards (OSHS)	<ul style="list-style-type: none">• Written questions• Oral questions• Observation of work procedures
2. Control environmental Pollution	<ul style="list-style-type: none">• Types of pollution• Bio-magnification• Environmental pollution control measures• Types of solid wastes• Procedures for solid waste management• Types of liquid wastes• Procedures for liquid waste management	<ul style="list-style-type: none">• Written questions• Oral questions• Observation of work procedures• Role play

	<ul style="list-style-type: none"> • Different types of air and noise pollution • Methods for minimizing air and noise pollution 	
3. Demonstrate sustainable resource use	<ul style="list-style-type: none"> • Types of resources • Techniques in measuring current usage of resources • Calculating current usage of resources • Methods for minimizing wastage • Waste management procedures • Principles of 3Rs (Reduce, Reuse, Recycle) • Methods for economizing or reducing resource consumption 	<ul style="list-style-type: none"> • Written questions • Oral questions • Observation of work procedures • Role play
4. Implement specific environmental programs	<ul style="list-style-type: none"> • Community needs and expectations • Resource availability • 5s methodology (Sort, Set In Order, Shine, Standardize and Sustain) • Identification of programs/Activities • Setting of individual roles / responsibilities • Resolving problems / constraints encountered • Consultation with stakeholders 	<ul style="list-style-type: none"> • Written questions • Oral questions • Observation of work procedures • Role play

Suggested Delivery Methods

- Instructor led facilitation of theory
- Practical demonstration of tasks by trainer
- Practice by trainees
- Observations and comments and corrections by trainers
- Projects
- Case studies
- Audio-visual digital presentation
- Assignments

Recommended Resources

- Standard operating and/or other workplace procedures manuals
- Specific job procedures manuals
- NEMA regulations

- Environmental Management and Coordination Act 1999
- Machine/equipment manufacturer's specifications and instructions
- Personal Protective Equipment (PPE)
- ISO standards
- Company environmental management systems(EMS)
- Montreal Protocol
- Kyoto Protocol

OCCUPATIONAL SAFETY AND HEALTH PRACTICES

UNIT CODE:

Relationship to Occupational Standards

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

Duration of Unit: 32 hours

Unit Description

This unit describes the competencies required to comply with regulatory and organizational requirements for occupational safety and health.

Summary of Learning Outcomes

1. Identify workplace hazards and risks
2. Identify and implement appropriate control measures to hazards and risks
3. Implement OSH programs, procedures and policies/guidelines

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Identify workplace hazards and risks	<ul style="list-style-type: none">• Identification of hazards in the workplace and/or the indicators of their presence• Evaluation and/or work environment measurements of OSH hazards/risk existing in the workplace• Gathering of OSH issues and/or concerns	<ul style="list-style-type: none">• Oral questions• Written tests• Observation of trainees identify hazards and risks
2. Identify and implement appropriate control measure to hazards and risks	<ul style="list-style-type: none">• Prevention and control measures e.g. use of PPE• Contingency measures	<ul style="list-style-type: none">• Oral questions• Written tests• Practical tests• Observation of implementation of control measures
3. Implement OSH programs, procedures and policies/ guidelines	<ul style="list-style-type: none">• Company OSH program, procedures and policies/guidelines• Implementation of OSH procedures	<ul style="list-style-type: none">• Oral questions• Written tests• Practical test

Learning Outcome	Content	Suggested Assessment Methods
	and policies/ guidelines <ul style="list-style-type: none"> • Implementation of procedures for maintaining OSH-related records 	<ul style="list-style-type: none"> • Observation

Suggested Delivery Methods

- Instructor led facilitation of theory
- Demonstration by trainer
- Practical work by trainee
- Viewing of related videos

Recommended Resources

- Standard operating and/or other workplace procedures manuals
- Specific job procedures manuals
- Machine/equipment manufacturer's specifications and instructions
- Personal Protective Equipment (PPE) e.g.
 - Mask
 - Face mask/shield
 - Safety boots
 - Safety harness
 - Arm/Hand guard, gloves
 - Eye protection (goggles, shield)
 - Hearing protection (ear muffs, ear plugs)
 - Hair Net/cap/bonnet
 - Hard hat
 - Face protection (mask, shield)
 - Apron/Gown/coverall/jump suit
 - Anti-static suits
 - High-visibility reflective vest

CORE UNITS OF LEARNING

HATCHING EGGS HANDLING

UNIT CODE:

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Handle Eggs for Hatching

Duration of Unit: 112 hours

Unit Description

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

Summary of Learning Outcomes

1. Grade eggs for hatching
2. Store fumigated eggs
3. Enter hatchery records

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Grade eggs for hatching	<ul style="list-style-type: none">• Occupational safety and health procedures• Hatching eggs handling<ul style="list-style-type: none">○ Egg reception○ Traying○ Loading• Grading of hatching eggs<ul style="list-style-type: none">○ Standard conditions of hatching eggs○ Inspection○ Sorting	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report• Interviewing
2. Store fumigated eggs	<ul style="list-style-type: none">• Hatchery pest and predator control• Egg fumigation• Egg storage<ul style="list-style-type: none">○ Storage materials○ Storage conditions○ Storage duration• Waste management	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report• Interviewing

3. Enter hatchery records	<ul style="list-style-type: none"> • Egg parameters recordings <ul style="list-style-type: none"> ○ Egg numbers (received, sorted, rejected and stored) ○ Egg weight / size / shape ○ Type of eggs (Breed / species) 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report • Interviewing
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Suggested Methods of Delivery

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

Recommended Resources

Functional hatchery farm with the following:		
<ul style="list-style-type: none"> • Hatchery unit • Biosecurity structures and materials (gate barriers, foot baths, spray races / showers, disinfectants, sanitizers, detergents, fumigants, water and vaccination kits) • 	<ul style="list-style-type: none"> • Labels or labelling materials for egg trays, trolleys, chick baskets and packaging material • Stationery • Calculators and / or computers 	<ul style="list-style-type: none"> • Hatchery pest and predator control equipment and materials • Hatchery operations manuals • Livestock production manuals • Journal of poultry science

POULTRY EGGS HATCHING

UNIT CODE:

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Hatch Poultry Eggs

Duration of Unit: 96 hours

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.

Summary of Learning Outcomes

1. Set poultry eggs
2. Monitor egg hatching
3. Transfer hatched chicks
4. Enter hatchery records

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Set poultry eggs	<ul style="list-style-type: none">• PPE• Hatchery Biosecurity measures• Egg structure• Egg retrieval from cold storage• Egg traying room• Setting trays• Setting trolleys• Egg setting<ul style="list-style-type: none">○ Setting position (vertical with broad ends up)○ Incubation chamber parameters (temperature and humidity)○ Turning mechanisms, angles and frequency○ Duration of setting○ Power outage and back up options	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report• Interviewing

2. Monitor egg hatching	<ul style="list-style-type: none"> • Egg incubation periods of poultry • Hatching dates • Removal from hatching trays • Egg candling <ul style="list-style-type: none"> ○ Infertile eggs ○ Dead in shell embryos ○ Exploders • Transfer to hatching baskets • Hatching position (horizontal) • Hatching machines • Transfer to hatching machine • Chick hatching process <ul style="list-style-type: none"> ○ Hatching parameters (temperature, humidity and CO2 concentrations) ○ Pipping / shell cracking ○ Hatch window (duration) ○ Hatching indicators (amount of fluff, chick noises) 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report • Interviewing
3. Transfer hatched chicks	<ul style="list-style-type: none"> • Chick transfer <ul style="list-style-type: none"> ○ Basket pulling ○ Chick separation from debris ○ Chick sorting – sorting criteria • Unhatched eggs <ul style="list-style-type: none"> ○ Stages of embryonic deaths (dead in shell, pipped) ○ Causes of embryonic deaths • Remedial measures to minimise the embryonic deaths • Disposal of hatchery wastes 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report • Interviewing
4. Enter hatchery records	<ul style="list-style-type: none"> • Incubation parameter recordings <ul style="list-style-type: none"> ○ Power outages • Egg parameters (numbers incubated, candled, rejected, hatched, type of eggs, breed) • Batch numbers, flock, dates of incubation, candling hatching and transfer) 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report • Interviewing

Suggested Methods of Delivery

- Project
- Demonstration by trainer
- Practice by the trainee
- Field trips
- Discussions

- Direct instruction
- Electronic audio-visual presentations
- Simulations

Recommended Resources

Functional hatchery farm with the following:		
<ul style="list-style-type: none"> • Hatchery unit • Biosecurity structures and materials (gate barriers, foot baths, spray races / showers, disinfectants, sanitizers, detergents, fumigants, water and vaccination kits) • Labels or labelling materials for egg trays, trolleys, chick baskets and packaging material • Stationery • Calculators and / or computers 	<ul style="list-style-type: none"> • Hatchery equipment and tools (fumigators, sprayers, refrigerators, hatching machines, setters / incubators, candling machines, egg crates and trays, egg trolleys, hatching baskets, chick boxes, chick labels, identification kits, macerators and renderers, gas cylinders, vacuum cleaners) 	<ul style="list-style-type: none"> • Hatchery pest and predator control equipment and materials • Hatchery operations manuals • Livestock production manuals • Journal of poultry science • Chick feed • Feed stores

HATCHED CHICKS HANDLING

UNIT CODE:

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Handle Hatched Chicks

Duration of Unit: 112 hours

Unit Description

This unit specifies the competencies required to handle hatched chicks. It involves chick sexing, trimming chick beaks, monitoring of health, chick packaging, management of unwanted chicks; implementation of hatchery biosecurity measures, and entry of hatchery records.

Summary of Learning Outcomes

1. Perform chick sexing
2. Trim chick beaks
3. Monitor chick health
4. Package poultry chicks
5. Manage unwanted chicks
6. Implement hatchery biosecurity measures
7. Maintain hatchery records

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Perform chick sexing	<ul style="list-style-type: none">• Sexing of poultry<ul style="list-style-type: none">○ Vent sexing○ Initial relative feather length○ Plumage colour sexing○ Combs and wattles sexing• Factors considered in separation of poultry into different sexes	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report• Interviewing
2.	<ul style="list-style-type: none">• Beak trimming equipment• Beak trimming procedure	<ul style="list-style-type: none">• Written tests• Observation• Oral questions• Third party report• Interviewing

<p>3. Monitor chick health</p>	<ul style="list-style-type: none"> ● Factors considered when developing chick vaccination schedule <ul style="list-style-type: none"> ○ Disease prevalence ○ Duration of immunity (lifetime or partial) ○ Disease severity ○ Economic importance ● Types of vaccines (live attenuated, inactivated, vectored/recombinant) ● Vaccine handling ● Refrigeration methods ● Record keeping ● Vaccination sites and routes ● Vaccine intake ● Animal welfare regulations ● Chick handling ● Recording vaccination details <ul style="list-style-type: none"> ○ 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 chick vaccine administration (IM, sub-cutaneous, intra nasal, intra ocular or spray, follicular swabbing, drinking water application, scarification) ○ Number of birds vaccinated ○ Identification of birds (flock, type, breed) 	<ul style="list-style-type: none"> ● Written tests ● Observation ● Oral questions ● Third party report ● Interviewing
<p>4. Package poultry chicks</p>	<ul style="list-style-type: none"> ● Chick packaging materials <ul style="list-style-type: none"> ○ Types (cartons, carton liners etc) ○ Labelling ○ Loading capacities ● Chick transportation <ul style="list-style-type: none"> ○ Transportation conditions (Temperature, humidity, air speed) ○ Transportation duration ● Poultry welfare ● Dispatch methods and procedures <ul style="list-style-type: none"> ○ Order processing ○ Distribution channels 	<ul style="list-style-type: none"> ● Written tests ● Observation ● Oral questions ● Third party report ● Interviewing
<p>5. Manage unwanted chicks</p>	<ul style="list-style-type: none"> ● Categories of unwanted chicks <ul style="list-style-type: none"> ○ Types (culled, unhealthy, deformed and males in commercial layers) ● Chick sorting 	<ul style="list-style-type: none"> ● Written tests ● Observation ● Oral questions

	<ul style="list-style-type: none"> • Modes of disposal 	<ul style="list-style-type: none"> • Third party report • Interviewing
6. Maintain hatchery biosecurity measures	<ul style="list-style-type: none"> • Biosecurity in a poultry hatchery firm <ul style="list-style-type: none"> ○ Measures ○ Standard operational procedures (SOPs) ○ Regulatory bodies • Designing biosecurity structures and equipment installation • Written standard biosecurity operational procedures in poultry hatchery farms • Occupational safety and health procedures in poultry hatchery firm • Hatchery firm waste management <ul style="list-style-type: none"> ○ Eggs unsuitable for hatching ○ Hatchery debris (fluff, egg shells, unhatched eggs) ○ Dead chicks ○ Litter (droppings, feathers, spilt feed) ○ Other wastes (plastics, glass, paper, metals and fluids) ○ Environment protection regulations • Hatchery operations licensing 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report • Interviewing
7. Maintain hatchery records	<ul style="list-style-type: none"> • Poultry hatchery chick records <ul style="list-style-type: none"> ○ Number of chicks hatched, vaccinated, sexed (males and females), dead, deformed, weaklings, ○ Health records – vaccination ○ Dispatch records – orders, dates, numbers (chicks) ○ Data entry, analysis and interpretation ○ Frequency of recording ○ Record maintenance (updating and storage) 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questions • Third party report • Interviewing

Suggested Methods of Delivery

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

- Simulations

Recommended Resources

Functional hatchery farm with the following:		
<ul style="list-style-type: none"> • Hatchery unit • Biosecurity structures and materials (gate barriers, foot baths, spray races / showers, disinfectants, sanitizers, detergents, fumigants, water and vaccination kits) • Labels or labelling materials for egg trays, trolleys, chick baskets and packaging material • Stationery • Calculators and / or computers 	<ul style="list-style-type: none"> • Hatchery equipment and tools (fumigators, foggers/sprayers, refrigerators, hatching machines, setters / incubators, candling machines, egg crates and trays, egg trolleys, hatching baskets, chick boxes, chick labels, identification kits, macerators and renderers, gas cylinders, vacuum cleaners) 	<ul style="list-style-type: none"> • Hatchery pest and predator control equipment and materials • Hatchery operations manuals • Livestock production manuals • Journal of poultry science • Chick feed • Feed stores